



*Opening of the International Conference and the fourth Danubia-Adria Symposium*

The fourth Danubia-Adria Symposium took place in Plzeň in the former Czechoslovakia. The Symposium was organized in parallel with the International Conference on *Measurement of Static and Dynamic Parameters of Structures and Materials*, and took place between May 26 and May 28, 1987. Full texts of the submitted papers were published in two-volume proceedings on a total of 645 pages. The proceedings contained 103 papers, out of which 46 dealing with experimental methods in Solid Mechanics and pertaining to the Danubia Adria Symposium. The International Conference and the Danubia-Adria Symposium were sponsored by IMEKO TC-15.

Just before the beginning of the fourth Danubia-Adria Symposium and the International Conference, the chairman of the Organizing Committee of both scientific meetings, Ass



*Jan Javornický*

Prof Jan Javornický, Master of Engineering, passed away. During the meetings, homage was paid to our late colleague; the eulogy is given below.

### **In memoriam: Jan Javornický**

We bewail the departure of Jan Javornický, a highly esteemed scientist in the field of Solid and especially Experimental Mechanics. The scientific community lost a colleague of an international reputation. Suffering from malicious disease for years, he passed away too early to the regret of his family and his friends all over the world.

Dr. Jan Javornický had been active for decades in promoting the principles of Experimental Mechanics; he played the most active role in improving an international cooperation, too, and was therefore very interested in promoting the activities of IMEKO-Technical Committee No. 15 „Measurement in Experimental Mechanics“.

Although mainly engaged in basic scientific research, Jan Javornický never lost his links to practice, always trying to solve real problems. He had never hovered in clouds of mere academic thinking, but had always identified practical problems and made them the topic of his research; at the same time, he had always been interested in transferring scientific knowledge into practice in order to ultimately improve economic and social situation.

German philosopher Schopenhauer once said: „Mankind will not make any essential progress as long as people are inclined to listen to those who speak very loudly instead of listening to those who speak most intelligently“. At no time had Jan Javornický spoken either too much or too loudly, but whenever he spoke and whatever he had to say had always mirrored his outstanding intellect and his ability of coherent analytical thinking. These are the reasons why any discussion with him was always inspiring, no matter what the subject was.

The scientific community of the CSR, as well as his friends all over the world, especially the members of the IMEKO-Technical Committee No. 15, are indebted to Jan Javornický for his activities and endeavours. Therefore we have to take care of his legacy and strive hard to achieve mutual understanding among human

beings across all frontiers and to promote the principles and methods of Experimental Mechanics. Each and every one of us has to remind oneself of the message conveyed by his life and work; this should be our obligation in memoriam of Jan Javornický.



*Photos from the scientific meeting in Plzen*

## THE FIFTH DANUBIA-ADRIA SYMPOSIUM

Udine, Italy, 1988



The City of Udine is located in north-eastern Italy, right between the Adriatic Sea and the Alps and less than 40 km away from the Slovenian border. Its Friulian name is Udin (Slovenian; *Videm*; Latin: *Utinum*). The population of Udine approximates to 100,000. Udine was first mentioned as Udene in Medieval Latin records dating back to 983 and as Utinum around the year 1000. After the fall of the Roman Empire in 476, the city fell under the rule of Ostrogoths, Byzantium and Lombards. In 1077 it became a part of the Patriarchal State of Friuli. In 1420, Udine came under the domination of the Republic of Venice and had remained under Venetian control until the fall of the Republic of Venice in 1797. After a short French rule, the Congress of Vienna created the Austrian puppet Kingdom of Lombardy-Venetia, which was included into the newly-formed Kingdom of Italy in 1866. The Udine region is known as the crossroad of cultures and nations, and as the sole point in Europe at which the Latin culture meets its Slavic and German counterparts.



*Loggia del Lionello at night*



*Loggia di S. Giovanni built in the 16<sup>th</sup> century*

Udine is rich in monuments that are important both from historical and artistic point of view. The oldest monument is the *Loggia del Lionello*, built in Gothic style. The castle that dominates the city was razed to the ground in 1517 and rebuilt in the centuries to come. The Cathedral was erected in 1236 and later dedicated to St. Maria Maggiore.



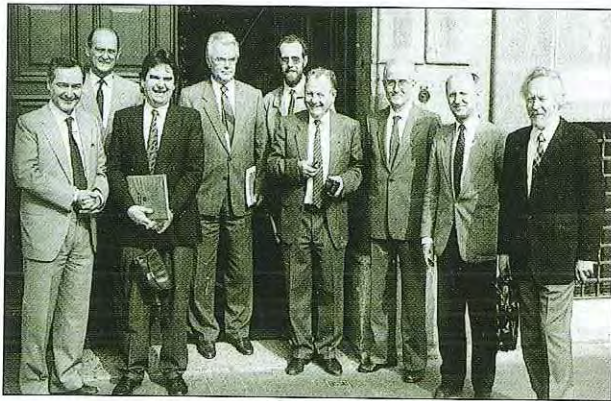
*Palazzo del Torso, Piazza Garibaldi*

Udine is the seat of the International Centre of Mechanical Sciences (CISM; Centre Internationale Des Sciences Mécaniques), founded in 1969 with the support of several European academies, research centres and scientific societies. It is also the seat of the University of Udine, founded in 1976.

Starting from the fifth Danubia-Adria Symposium, Spring Meetings have been organized by the society that undertook the organisation of the Symposium. In light of the foregoing, the Spring Meeting precedent to the fifth Danubia-Adria Symposium was held in CISM headquarters in Palazzo del Torso, Piazza Garibaldi, Udine. On top of four scientific societies from Austria, Croatia, Hungary and

Italy, the co-organizer of the fifth Danubia-Adria Symposium was also the CISM (Centre Internationale des Sciences Mécaniques).


The fifth Danubia-Adria Symposium on Experimental Methods in Solid Mechanics took place in Palazzo del Torso, the headquarters of the CISM Udine, between October 13 and October 15, 1988.



*Danubia-Adria Committee convened at the Spring Meeting in Udine: Freddi, Jecić, Fleisch, Alfirević, Di Marino, Beer, Bianchi, Affenzehler, Curioni*



*G. Bianchi, Mrs. Freddi, Mrs. Curioni, S. Curioni, and A. Freddi in Palazzo del Torso*



Final Announcement

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**THE FIFTH DANUBIA-ADRIA SYMPOSIUM**  
on  
**EXPERIMENTAL METHODS IN  
SOLID MECHANICS**

October 13 - 15, 1988  
CISM - Udine (Italy)

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organized by

*Associazione Italiana per l'Analisi delle Sollecitazioni (AIAS)  
Centre International des Sciences Mécaniques (CISM)  
Austrian Society of Experimental Strain Analysis (ASESA)  
Hungarian Scientific Society of Mechanical Engineers  
Yugoslav Society of Mechanics (Croatian Society of  
Mechanics)*

**Accommodation**  
A list of hotels and a map of Udine are enclosed. A limited number of rooms may be available at the Students Residence at the price of about 13 US dollars per night. People interested are invited to send an early request to CISM Secretariat.


**Organizing and Scientific Committee**  
J. Affenzeller (Austria)  
I. Alfirevic (Yugoslavia)  
R. Beer (Austria)  
G. Bianchi (Italy)  
S. Curioni (Italy)  
F. Di Marino (Italy)  
R. Fleisch (Austria)  
A. Freddi (Italy)  
I. Huszar (Hungary)  
S. Jecic (Yugoslavia)  
F. Thamm (Hungary)  
M. Tschinke (Italy)

**The fee for the participants covers:**  
— Abstracts  
— Symposium attendance  
— Conference dinner

**The fee for accompanying persons covers:**  
— Reception and conference dinner.  
An excursion to Venice with a separate fee can be organized.

**For any further information please contact:**  
Signora E. Venir Burti

CISM  
Piazza Garibaldi 18  
33100 UDINE (Italy)  
Tel. (0432) 294989 - 501523



BOOK OF ABSTRACTS

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**THE FIFTH DANUBIA-ADRIA SYMPOSIUM**  
ON:  
**"EXPERIMENTAL METHODS IN SOLID  
MECHANICS"**

13-15 October 1988 CISM (Udine - Italy)

---

organized by

*Associazione Italiana per l'Analisi delle Sollecitazioni (AIAS)  
Centre International des Sciences Mécaniques (CISM)  
Austrian Society of Experimental Strain Analysis (ASESA)  
Hungarian Scientific Society of Mechanical Engineers  
Yugoslav Society of Mechanics (Croatian Society of Mechanics)*

*Final Announcement and Symposium Proceedings*

**Symposium Dinner**



R. Beer, A. Mulc, S. Curioni



I. Alfrevič, A. Freddi



Ž. Goja, D. Semenski, I. Alfrevič, A. Freddi



S. Jecić, B. Angeli-Radovani, D. Diklić

**Country Number of papers**

Austria	7
Croatia*	14
Hungary	6
Italy	14
Georgia **	2
Germany	2
Serbia *	1
UK	1
<b>Total</b>	<b>47</b>

\* Parts of the former Yugoslavia

\*\* Part of the former USSR



Forty seven papers were submitted by 74 authors coming from 9 countries. On top of countries of authors' establishment listed in the above table, one co-author came from Slovenia. All contributions were divided into six groups:

1. Optical Methods	11 papers
2. Fracture Mechanics and Fatigue	6 papers
3. Dynamic Problems	8 papers
4. Industrial Applications	6 papers
5. Mixed and Basic Problems	8 papers
6. Hybrid Methods	3 papers

## Papers:

**1. Optical Methods**

K. Antropius and V. Weiss (CSSR): Investigation of G.R.P. - Coated Plain-Concrete Beams under Cyclic Loading by Means of Holographic Interferometry.

H. Bednarczyk (F.R.G.): On the Connexion of Induced Birefringence with Absorption Spectra and Reflection Properties of Transparency Materials.

G. Di Chirico (Italy): Moire - Holographic Analysis of Displacement and Strain Fields.

J. Hibig, R. Ritter, Th. Sack, W. Wilke, (F.R.G.): Strain Measurement by the Diffraction Principle.

M. Husnjak and Z. Goja (Yugoslavia): Experimental Stress Analysis in 3D Bodies Loaded by Centrifugal Forces.

S. Jecic (Yugoslavia): Experimental and Numerical Determination of Stresses in Pressurized Thick Cylinder with Holes.

A. Kvernadze (USSR): The Study of Extension of Fatigue Crack in Concrete by Means of Holographic Interferometry Method.

A. Mulc (Yugoslavia): Influence of Materials Formability on Flexibility of Forging with Flat Tools.

D. Pustajc and B. Stok (Yugoslavia): Photoelastic and Numerical Stress Investigation of Some Two-Dimensional Models.

H.P. Rossmanith and R.E. Knasmillner (Austria): Scattering of Rayleigh-Pulses about Surface Cracks.

F. Thamm (Hungary): Applications of Photoelasticity for the Investigation of Bonded Joints.

**2. Fracture Mechanics and Fatigue**

C. Carmignani, E. Manfredi, E. Vitale (Italy): Recent Activity of the Department of Mechanical and Nuclear Construction of Pisa University in the Field of Experimental Mechanics.

S. Curioni, A. Freddi, G. Caligiana (Italy): Low Cycle Fatigue and Fracture Mechanics Approach for Life Evaluation of Energy Systems.

A. La Barbera, M. Marchetti, G. Simonetti (Italy): Recent Developments of the Caustics Method for Fracture Mechanics Analysis.

Z. Tsilosani, G. Dalakishvili and G. Gulbani (USSR): Optical Holographic Interferometry for Study of Fracture Mechanics of Concrete.

D. Semenski (Yugoslavia): About the Connection between Stress-Intensity Factor  $K_I$  and Stress Concentration Factors.

J.C. Radon (England): On the Ultra-Low Fatigue Crack Growth.

**3. Dynamic Problems**

M. Butkovic, I. Skrtic, B. Kralj and J. Stefancic (Yugoslavia): Application of Modal Analysis in Experimental Determination of Dynamic Characteristics of Turbine Blades.

M. Butkovic, N. Zegarac, B. Ciska, I. Skrtic and B. Kralj (Yugoslavia): Diagnosis of Bearing Conditions by Measurements of Diesel Engine Journal and Case Vibrations.

F. Di Marino, R. Muscia, C. Braccesi (Italy): Constraints/Structure Interaction in the Modal Analysis of the Systems during the Simulations of the Free Body Condition.

R.G. Flesch and K. Kernbichler (Austria): A. Dynamic Method for the Safety Inspection of Large Prestressed Bridges.

R. Hasenzagl and F. Ziegler (Austria): Measurement and Estimation of Vibrations of Constructions caused by Vibrators.

F.G. Rammerstorfer (Austria): Experimental Investigation of Parametric Resonances.

I. Skrtic, C. Kralj, J. Stefancic and B. Ciska (Yugoslavia): Experimental Determination of Dynamic and Acoustic Characteristics of Heat Exchangers.

**4. Industrial Applications I**

L. Borbas and F. Thamm (Hungary): Investigations of the Optimum Design of Frame Junctions with Respect to the Welding Procedure.

R. Mozniker, B. Sandler (Israel): Measuring Device for Angular Vibrations on Rotating Objects.

A. Zsary and L. Borbas (Hungary): Fatigue Tests and Stress Analysis of Bus Frame Junction Points.

**5. Industrial Applications II**

J. Affenzeller and W. Platzer (Austria): Experimental and Theoretical Investigations on Engine Valve Train.

S. Curioni, A. Freddi, M. Forghieri, V. Bolletta (Italy): Experimental Stress Analysis of an Engine-Rod of a Race-Car.

A. Szittner (Hungary): Stress Analysis in Connection with Overhaul of the Freedom Bridge in Budapest.

**6. Mixed and Basic Problems**

A. Ajovalasit (Italy): Experimental Stress Analysis of Residual Stresses: Comparison of Hole-Drilling, Core and Ring Methods.

I. Alfirevic (Yugoslavia): Contribution to Strength Theories and Strength Measurements.

B. Angeli Radovani and D. Diklic (Yugoslavia): Tension in Concrete Structures.

A. Capecchi (Italy): The Measurement of Damping in Metals at Room Temperature and Vanishing Amplitude.

P. Daponte, R.S. Olivito, G. Spadea (Italy): Experimental Techniques in Contact Problems.

V. Dolhof (CSSR): The Welding Effect of a Weldable Strain Gauge Plate Upon Static and Fatigue Strength of a Component Part.

I. Huszar and B. Csizmadia (Hungary): Investigation of the Deformation in Mine Structures.

D. Josifovic, M. Jovanovic and O. Stojanovic (Yugoslavia): Joint Strength of Alloy Al-Mg with Lower Strength Weld Metal.

**7. Hybrid Methods**

K.H. Laermann (F.R.G.): On the Application of the Boundary Integral Method in Experimental Stress Analysis.

L. Korondi (Hungary): Comparison of Strain Measurements on a Railway Bridge with the Results of a Model Experiment.

G. Swoboda, G. Zenz and G. Niederwanger (Austria): Numerical Model of Blasting during Driving with in Situ Measurements.

*List of papers submitted to the Symposium*

## THE SIXTH DANUBIA-ADRIA SYMPOSIUM

Mösern, Austria, 1989



The small village of Mösern is located on the edge of the Seefeld Plateau, 1,200 m above the sea level and about 25 km west of Innsbruck. Mösern offers a magnificent view of the Oberinntal River valley and the surrounding mountain chain. It has only 100 houses with about 350 inhabitants and is, administratively speaking, a part of Telfs, the town situated in the valley below. Seefeld was twice the host to the Winter Olympics (in 1964 and 1976), while the nearby Innsbruck hosted the Winter Youth Olympic Games that took place between January 13 and January 22, 2012.



*Mösern panorama*

The Spring Meeting precedent to the sixth Danubia-Adria Symposium on Experimental Methods in Solid Mechanics was held at a

hotel in the Town of Innsbruck. After the meeting, the members of the Danubia-Adria Committee and their accompanying persons visited the marvellous mountain resort Mösern near Seefeld, where the sixth Danubia-Adria Symposium was going to take place.



*Members of the Danubia-Adria Committee convened at 1989 Spring Meeting:  
I. Huszár, F. Di Marino, G. Niederwanger, R. Beer, A. Freddi and I. Alfrević*



*Visit to Mösern: F. di Marino, G. Niederwanger, I. Huszár, R. Beer, and I. Alfrević with his family (Helena, Emilija and Izidor)*



*A. Freddi, E. Alfrević*



G. Niederwanger, S. Jecić



Inntaler Hof, Mösern, Seefeld

The sixth Danubia-Adria Symposium on Experimental Methods in Solid Mechanics took place in Inntaler Hof Hotel in Mösern near Seefeld from October 5 to October 7, 1989. For the first time ever, it lasted even three days. The Symposium was organized in parallel with the fifth Austrian Colloquium on Experimental Strain Analysis, the co-organisers of the events being the Danubia-Adria Committee and the Austrian Society of Experimental Strain Analysis – ASESA. In line with the foregoing, the members of the Organizing and Scientific

Committee were delegated by both parties. The members of these bodies were the following:

- J. Affenzeller, Graz
- I. Alfrević, Zagreb
- F. Di Marino, Trieste
- A. Freddi, Bologna
- I. Huszar, Budapest
- S. Jecić, Zagreb
- F. Thamm, Budapest
- R. Flesch, Wien

- W. Jud, Graz
- G. Krisper, Steyr
- G. Niederwanger, Innsbruck
- F. Rammerstofer, Wien
- H. Schmid, Innsbruck
- F. Sturm, Leoben
- F. Wallner, Linz

6th DANUBIA-ADRIA-SYMPOSIUM  
on  
EXPERIMENTAL METHODS  
IN SOLID MECHANICS  
and  
5th AUSTRIAN COLLOQUIUM  
of  
EXPERIMENTAL STRAIN ANALYSIS

Co-organized by:

Austrian Society of Experimental Strain Analysis - ASESA  
Associazione Italiana per l'Analisi delle Sottocitazioni - AIAS  
Hungarian Scientific Society of Mechanical Engineers  
Yugoslav Society of Mechanics (Croatian Society of Mechanics)

MÖSERN near Seefeld (Tirol)  
HOTEL INNTALERHOF  
October 5 - 7, 1989

The Symposium is protected by  
LANDESHAUPTMANN DR. ALOIS PARTL

Organizing and Scientific Committee

**Austria:**  
Affenzeller, J. - Graz  
Beer, R.J. - Wien  
Flesch, R. - Wien  
Jud, W. - Graz  
Krisper, G. - Steyr  
Niederwanger, G. - Innsbruck  
Rammerstofer, F. - Wien  
Rossmann, H.F. - Wien  
Schmid, H.J. - Innsbruck  
Sturm, F. - Leoben  
Wallner, F. - Linz

**Hungary:**  
Huszar, I. - Budapest  
Thamm, F. - Budapest

**Italy:**  
Freddi, A. - Bologna  
Di Marino, F. - Trieste

**Yugoslavia:**  
Alfrevic, I. - Zagreb  
Jecic, S. - Zagreb

**Registration:**  
The registration office in the hotel is open  
Thursday, Oct. 5, 15:00-17:00  
Friday, Oct. 6, 8:00-10:00  
Saturday, Oct. 7, 8:00-10:00

**Registration fee:** AUS 1.500,- payable to account OE1H-ASESA, CA-BV Nr. 6064-01-63030 or at the registration desk.

**Program:**

Thursday, 05 10 1989  
Excursion to the power station Zillertalgründl

09:00 start by bus from the Hotel "Inntalerhof" in Mösern  
09:30 stop at the main station in Innsbruck possible for getting in  
12:00 lunch in Häusling  
13:00 visit to the power station, the concrete dam and the installed measurement system  
15:00 start back  
17:00 arrival in Innsbruck

18:30 Invitation given by Landes-hauptmann Dr. Alois Partl Landhaus, Landhausplatz 1

6th DANUBIA-ADRIA-SYMPOSIUM  
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Yugoslav Society of Mechanics (Croatian Society of Mechanics)

MÖSERN near Seefeld (Tirol)  
HOTEL INNTALERHOF  
October 5 - 7, 1989

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LANDESHAUPTMANN DR. ALOIS PARTL

Final Announcement and Symposium Proceedings



At the Danubia-Adria Committee meeting held in Mösern, the Czechoslovakian Society of Mechanics was accepted as a member of the Danubia-Adria Committee.

The year in which the sixth Danubia-Adria Symposium took place was politically and socially a very turbulent one. A wave of civic and student protests had been witnessed in Central Europe, Soviet Union, China and some other communist countries. The events that led to the democratization of the Eastern and Central European countries began in Poland in 1989 and continued in Hungary, East Germany, Bulgaria, Czechoslovakia and Romania. Hungary began dismantling its border fence to Austria on May 12, 1989. The Tiananmen Square student protests that started on April 14, 1989, were brutally crushed by tanks on June 4. The Berlin Wall or the *Wall of Shame*, as called by the Mayor Willy Brandt, fell on November 9, 1989. Elena and Nicolai Ceausescu were sentenced to death and executed on December 25 of the same

year. The Velvet Revolution in Czechoslovakia took place from November 17 to December 29. On December 11, 1989, the last leader of the Bulgarian Communist Party, Petar Mladenov, announced that the Communist Party abandoned power.



*Congratulations after the acceptance of Czechoslovakia as the fifth member of the Danubia-Adria Committee*

Country	Number of papers
Austria	12
Croatia	2
Hungary	7
Italy	5
Bosnia and Her.	1
the Czech Republic	2
Germany	4
Kuwait	1
Serbia	1
UK	1
USA	1
<b>Total</b>	<b>37</b>

Fifty six authors and co-authors from eleven countries submitted a total of thirty seven papers.



*Photographs taken at the sixth Danubia-Adria Symposium*

## THE SEVENTH DANUBIA-ADRIA SYMPOSIUM

Pula, Croatia, 1990

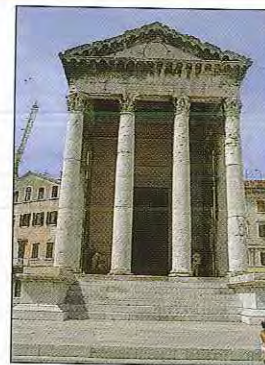


Pula (Italian: Pola; Slovenian: Pulj; Ancient Greek: Ρολαι) is the largest city in the Istria County, with a population of about 60,000. The area of Pula has been populated since the prehistoric times. The foundation of the first settlement dates back to the 10<sup>th</sup> century BC. Histrian peninsula was conquered by Romans in 177 BC. Between the years 46 and 45 BC, the settlement was up-scaled to a colonial rank and named *Colonia Pietas Iulia Pola Pollentia Herculanea*. The great amphitheatre had been built between 27 BC and 68 AD. Romans had also built a water supply and sewage system covering for the City. In ancient times, the highest number of Pula's citizens approximated to 30,000.

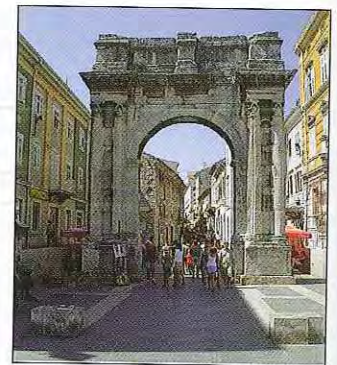
After the fall of the Roman Empire, this area fell under the rule of Ostrogoths and remained so from 493 to 538 AD. Between the years 540 and 751, Pula was a part of the Byzantine Exarchate of Ravenna. From 788 on, it became a part of the Frankish Kingdom. Venetians conquered the City in 1148. After the fall of the Venetian Republic in 1797, Pula was included into the French Empire. Between 1813 and 1918, Pula was ruled by Austrians. During that time Pula

became the main Austrian naval base and a major shipbuilding centre. Between 1918 and 1943, Pula was a part of the Kingdom of Italy. Between 1943 and 1945, the City was occupied by Germans, and between 1945 and 1947 administrated by the US & UK Allied Forces. Pursuant to, the Paris Peace Treaties, in September 1947 Pula was ceded to Croatia as a part of the former Yugoslavia.

The Spring Meeting precedent to the seventh Danubia-Adria Symposium was held in Zagreb on the premises of the Faculty of Mechanical Engineering and Naval Architecture. As usual, the main topic was the acceptance or the rejection of the received papers. The accepted papers were further selected for oral or poster presentation.



Arch of Sergii



The Temple of Augustus



The amphitheatre known as the Arena



St. Mary Formosa Chapel, dating back to the 6<sup>th</sup> century



*Session of the Scientific Committee in Zagreb, May, 1990: S. Jecić, I. Alfirević, A. Freddi, F. Di Marino, I. Huszár, F. Thamm*



*Members of the Scientific and Organising Committee standing on the parking lane of the Faculty: Thamm, Alfirević, Beer, Antropius, Freddi, Di Marino, Niederwanger, Huszár, Jecić*

The seventh Danubia-Adria Symposium on Experimental Methods in Solid Mechanics took place in Brijuni Hotel from October 4 to October 6, 1990. The Hotel is situated in Verudela, some 5 km south of the Pula city centre. For the first time ever, the Final Announcement of 1990 Symposium bore Danubia-Adria Committee's logo. This logo was created by Damir Semenski. It consists of a photo-elastic model compressed by two forces and two electrical resistance strain gages placed on its sides.



*Hotel Brijuni, Verudela, Pula*

Final Announcement  
SEVENTH  
DANUBIA - ADRIA - SYMPOSIUM  
ON  
EXPERIMENTAL METHODS  
IN SOLID MECHANICS



Co-organized by:

- Austrian Society of Experimental Strain Analysis (ASESA)
- Associazione Italiana per l'Analisi delle Sollecitazioni (AIAS)
- Czechoslovak Society for Mechanics (CSS)
- Hungarian Scientific Society of Mechanical Engineers
- Yugoslav Society of Mechanics (Croatian Society of Mechanics)

PULA - Verudela, Yugoslavia  
Hotel "BRIONI"

October 4 - 6, 1990

*A part of the Final Announcement*

Organizing and Scientific Committee

- J. Affenzeler (Graz)
- I. Alfirević (Zagreb)
- K. Antropius (Praha)
- R. Beer (Wien)
- F. Di Marino (Trieste)
- A. Freddi (Bologna)
- I. Huszár (Budapest)
- St. Jecić (Zagreb)
- F. Thamm (Budapest)
- J. Visner (Plzeň)

Local Organizing Committee

- St. Jecić
- I. Alfirević
- M. Husnjak
- D. Semenski
- J. Kodvanj
- J. Biondić

Registration:

The registration office in the hotel is open

- Thursday, Oct. 4, 9.00-19.00
- Friday, Oct. 5, 8.00-17.00
- Saturday, Oct. 6, 9.00-13.00

Registration fee of 100 USD is payable to account:  
Zagrebačka banka dd Zagreb  
Nr. 25731-3247767, Društvo za mehaniku Hrvatske, Zagreb, Đure Salaja 5.

If the payment is from Yugoslavia (100 USD equivalent in YUD) valiable account is:

Društvo za mehaniku Hrvatske, Zagreb, Đure Salaja 5, Nr. 30102-678-565

Registration fee can be paid at the registration desk too.

Language: Official language of the Symposium is English.

*A part of the Final Announcement*

PREFACE

Danubia-Adria Simposia are organized every year at the beginning of autumn. The members of the committee improving the organization of this simposium are the representatives of five countries: Austria, Checkoslovakia, Italy, Hungary and Yugoslavia. According to the agreement of this unformal committee, the D-A Simposia is concerned with recent research and development of the study of all aspects of experimental methods in solid mechanics. The aims of D-A simposia are to provide a forum for a close contact between scientists and engineers and to enable young scientists and researchers to attend an international simposium at low travelling and acomodation costs.

The Danubia-Adria committee is closely connected to the TC 15 committee of IMEKO and it is opened to all scientists, who have the experimental mechanics as their field of interest, all over the world. As the first simposium is organized in Yugoslavia, this come back represents some kind of jubilee of these every year meetings and it is also the beginning of the new experimental mechanics cycle.

St. Jecić

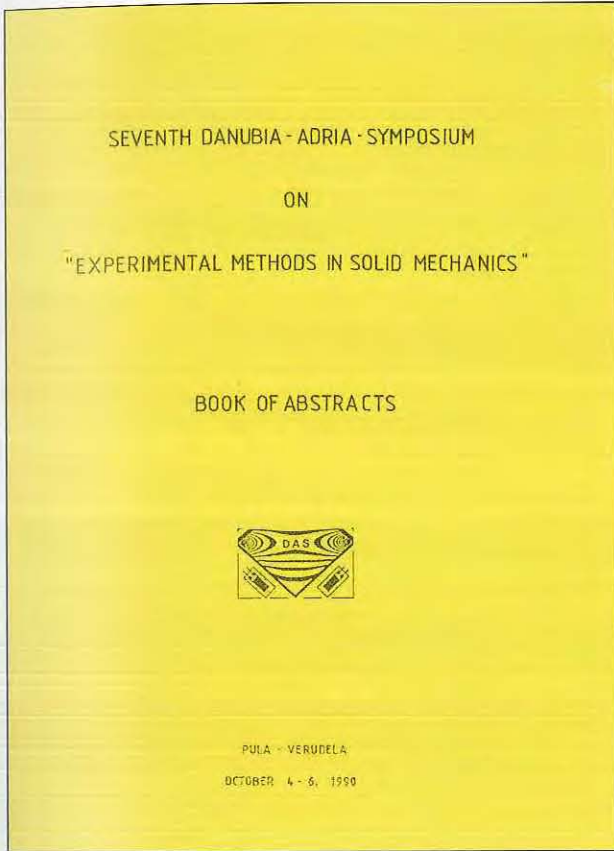


- 1. Stubičke toplice 1984.
- 2. Graz 1985.
- 3. Budapest 1986.
- 4. Plzen 1987.
- 5. Udine 1988.
- 6. Mösern 1989.
- 7. Pula 1990.

*Preface of the Book of Abstracts*

Country	Number of papers
Austria	4
Croatia	8
the Czech Republic	7
Germany	5
Hungary	6
Italy	7
Georgia	1
Kuwait	1
Macedonia	1
Serbia	1
Slovakia	1
Switzerland	1
USA	1
<b>Total</b>	<b>44</b>

*A total of 44 papers was submitted by 165 authors and co-authors coming from 14 countries.*



*Book of Abstracts*



*Scientific Committee in session: J. Eberhardsteiner, R. Beer, S. Jecić, D. Semenski, S. Curioni, I. Alfrević, F. di Marino, A. Freddi*



*Symposium Dinner: J. Biondić, S. Jecić, I. Alfrević*



*Scientific Committee in front of Brijuni Hotel  
Standing in the 1st row: F. Thamm, I. Alfrević, A. Freddi, S. Jecić  
Standing in the 2nd row: F. Di Marino, K. Antropius, S. Curioni,  
J. Eberhadsteiner, R. Beer, I. Huszár*

## THE EIGHTH DANUBIA-ADRIA SYMPOSIUM

Gödöllő, Hungary, 1991



Gödöllő (German Getterle, Slovak Jedľovő) is a town situated about 30 km northeast of Budapest that has a population of about 34,000. The settlement dates back to the beginning of the 14<sup>th</sup> century. During the Turkish occupation that began after the battle of Mohacs in 1526, its population had significantly decreased. Antal Grassalkovich purchased Gödöllő and decided to turn it into a large estate having its centre in Gödöllő. In 1741 he began to build a large residence palace, the greatest baroque palace in Hungary. In 1763, Gödöllő was granted

the right to establish markets. The grandson Grassalkovich III died in 1842 without children, leaving the estate heavily charged with debts. During the 1848 revolution, Lajos Kossuth and his generals chose Gödöllő for their headquarters. The estate of Gödöllő had been sold and purchased several times until bought back by the Hungarian state and given as a gift to the Emperor Franz Joseph and the Empress Elisabeth in 1867. The Royal Family stayed in Gödöllő mainly in spring and autumn. This had significantly improved Gödöllő's social life. The city is famous for its Royal Palace, which is the second largest baroque castle in the world. It has an arboretum, a botanical garden established in 1902.



*Aerial view on the Royal Palace*



*Szent István University*



*Photographs taken at the Spring Meeting, Gödöllő, May 1991*



Photographs taken at the Spring Meeting, Gödöllő, May 1991

For the first time ever, the Danubia-Adria Committee officially embraced also the representatives of the Czechoslovak Society of Mechanics (CZSM). The members of the Enlarged Committee of the eighth Danubia-Adria Symposium were:

- |                       |                      |
|-----------------------|----------------------|
| J. Affenzeller, Graz  | A. Freddi, Bologna   |
| I. Alfrević, Zagreb   | I. Huszar, Gödöllő   |
| K. Antropius, Prague  | S. Jecić, Zagreb     |
| R. Beer, Vienna       | J. Visner, Plzeň     |
| F. Di Marino, Trieste | F. Thamm, Budapest   |
| L. Borbas, Budapest   | S. Szabo, Budapest   |
| Z. Balassy, Gödöllő   | I. Saltesz, Budapest |

On top of ten already existent members of the Danubia-Adria Committee, four members of the local Hungarian Committee joined it as well.

The Eighth  
DANUBIA - ADRIA - SYMPOSIUM  
on  
EXPERIMENTAL METHODS  
in  
SOLID MECHANICS



will be organised in Gödöllő (near Budapest) by the Scientific Society of Mechanical Engineers, Section of Material Testing as an independent Session of the 10 th Congress on Material Testing from 11 th - 12 th October, 1991.

Co-organised by

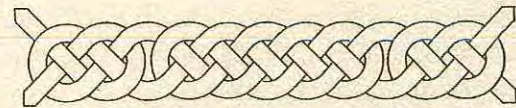
Austrian Society of Experimental Strain Analysis (ASESA)  
Associazione Italiana per l'Analisi delle Sollecitazioni (AIAS)  
Czechoslovak Society for Mechanics (CZSM)  
Yugoslav Society of Mechanics (Croatian Society of Mechanics)  
and sponsored by the University of Agricultural Sciences in Gödöllő

First Circular

CALL FOR PAPERS

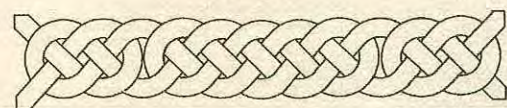
ORGANISING COMMITTEE

- |                        |  |
|------------------------|--|
| <u>Austria:</u>        | J. Affenzeller (Graz)<br>R. Beer (Wien)  |
| <u>Czechoslovakia:</u> | K. Antropius (Praha)<br>J. Visner (Plzeň)  |
| <u>Hungary:</u>        | I. Huszar (Gödöllő)<br>F. Thamm (Budapest)<br>L. Borbas (Budapest)<br>Z. Balassy (Gödöllő)<br>S. Szabo (Budapest)<br>I. Saltesz (Budapest) |
| <u>Italy:</u>          | A. Freddi (Bologna)<br>F. Di Marino (Trieste)  |
| <u>Yugoslavia:</u>     | I. Alfrević (Zagreb)<br>St. Jecić (Zagreb)   |



The 8th DANUBIA-ADRIA SYMPOSIUM  
on  
EXPERIMENTAL METHODS IN SOLID MECHANICS  
in Gödöllő, Hungary, 11-12 October 1991.

PROCEEDINGS



Symposium Proceedings

The Hungarian Society proposed a new logotype for the Danubia-Adria Symposia. This logotype can be seen on the first circulating copy termed "Call for Papers". This logotype represents a half-plane photo-elastic model loaded by a single force. Above it, the letters DA are placed, while above these letters three electrical resistance strain gages can be found. However, neither this nor the previously proposed logotype were widely accepted, but they both show that, at the time, photo-elasticity and electrical resistance strain gages were very important for the experimental stress analysis.

After free elections organised in 1990 and referendums for independence, two former Yugoslav Republics Croatia and Slovenia proclaimed their independence on June 25, 1991. Two days later, JNA (YPA – Yugoslav People’s Army) tried to occupy all Slovenian border crossings, thus starting the Ten Day War. However, by July 4<sup>th</sup> all border crossings were back in Slovenian hands. After its failure in Slovenia, JNA, together with local Serbs, attacked Croatia and brutal and dirty Croatian War of Independence broke up.

Although the participants from Croatia sent seven contributions to be presented at the eighth Danubia-Adria Symposium, due to the war no Croatian representatives attended the symposium. On the occasion, all members of the Danubia-Adria Committee and some other Symposium participants sent telegrams of encouragement to I. Alfrević and S Jecić.


In their proclamation of independence, Croatia and Slovenia were followed by other Yugoslav Republics. Bosnia and Herzegovina proclaimed sovereignty in October 1991. The declaration of independence was accepted on March 3, 1992. Macedonia voted for independence on September 8, 1991. Fifteen years later, the Parliament of Montenegro declared Montenegrin independence on June 3, 2006. The Republic of Kosovo declared independence from Serbia on February 17, 2008, completing in that manner the dissolution of the former Yugoslavia.

TELEFAX KISÉRŐLAP  
Agrármérnöki Egyesület  
2103 Gödöllő  
Telefax számok: (06-28) 30 804\*

Dátum: szept. 30, 1991

CÍMZETT	FELADÓ
Név: Prof. Sztjepan JECIĆ	Név: Prof. István SZILÁK
Cím: Szaklatár Strojarske Sveučilište u Zagrebu 41000 Zagreb Bulevarja 5.	Cím: GTR Mehadika, 0468116 Hungary-F103
Tel.: 043/611-544 Fax: 043.514-525	Tel.: (Hungary)-(28)-30-698 Fax: (Hungary)-(28)-30-804

A küldött oldalak száma a kisérő lapot is beleértve: 2



Köz. DANUBIA - ADRIA SYMPOSIUM  
sz. Experimental Methods in S-MS Mechanics  
October, 11-13, 1991  
GÖDÖLLŐ, Hungary      October 11, 1991

Dear Professor Alfrević  
Dear Professor Jecić,

way we tell you that we are missing all of  
you badly. But we understand very well  
your situation and hope that it will be im-  
proving in an acceptable way pretty soon.

All of us wish you and all our colleagues  
in Croatia all the best.

Yours,  
*[Handwritten signatures]*

The telegram sent to I. Alfrević & S. Jecić by the Danubia-Adria Committee convened in Gödöllő



Photographs taken at the eighth Danubia-Adria Symposium



The Soviet President Mikhail Gorbachev resigned on December 25, 1991. On the next day, the Soviet Union was formally dissolved and the independence of all fifteen former Soviet Republics was declared, ending in that manner the Cold War.

Country	Number of papers
Austria	4
Croatia *	7
the Czech Republic **	4
Hungary	12
Italy	5
Slovakia **	4
Estonia	1
Germany	2
Poland	2
Romania	2
U.K.	1
<b>Total</b>	<b>44</b>

\* Part of the former Yugoslavia

\*\* Part of the former Czechoslovakia

Eighty six authors from 11 countries submitted a total of 44 papers.

## THE NINTH DANUBIA-ADRIA SYMPOSIUM

Trieste, Italy, 1992



Trieste (Slovenian and Croatian Trst; German: Triest) is a city and seaport in the north-eastern Italy near Slovenian and Croatian border. Its population amounts to roughly 200,000. In 1910, Trieste was the fourth largest city in the Austro-Hungarian Empire, right after Vienna, Budapest and Prague.

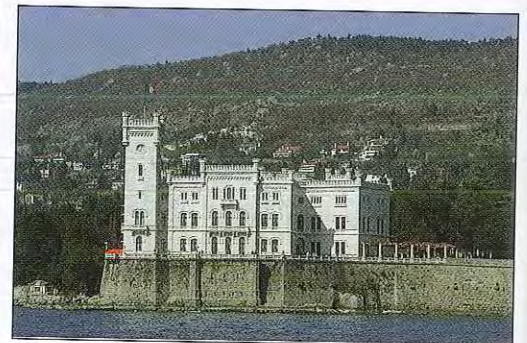
become a free city. In 1382, Trieste became a part of Austria. The Emperor Charles VI declared the city as a duty- and tax-free port; it soon grew into an important port and trade centre. In the beginning of the 20<sup>th</sup> century Trieste was a cosmopolitan and literary centre visited by many writers and artists. After the World War I, Trieste was ceded to Italy in 1920. The Spring Meeting precedent to the



Seafront of Trieste



Trieste panorama



The Miramare Castle

It was originally an Illyrian settlement that fell under Rome in 177 BC. Julius Caesar granted Trieste a colonial status; in his *Commentarii de bello Galico*, dating back to 51 BC, he recorded the town's name as Targeste. After the fall of the Western Roman Empire, Trieste was ruled by Ostrogoths and later on by Byzantines. In 788, Trieste became a part of the Kingdom of Franks. From 1081 on it was "loosely" under the rule of the Patriarchate of Aquileia, but by the end of the 12<sup>th</sup> century it had gradually

Danubia-Adria Symposium was held in Trieste in May 1992. On the occasion, a new logotype of the Danubia-Adria Committee was proposed. It was composed of five flags of the founding member states: Austria, Croatia, Czechoslovakia, Hungary and Italy, arranged in a pentagon. The logotype was accepted, since it could be easily adapted should new countries enter the Danubia-Adria Committee as members.




Photographs taken at 1992 Trieste Spring Meeting

The ninth Danubia-Adria Symposium on Experimental Methods in Solid Mechanics took place at Val Rosandra Motel in Trieste between October 1 and October 3, 1992.

On Thursday, October 1, the participants of

the ninth Symposium visited the shipyard *Fincantieri-Grandi Motori*. On Friday evening, October 2, the Flute Quartet "Die Zauberflöte" gave a concert for the Symposium participants.



**NINTH DANUBIA - ADRIA SYMPOSIUM**  
on **EXPERIMENTAL METHODS** in **SOLID MECHANICS**  
OCTOBER 1 - 3, 1992 TRIESTE ITALY

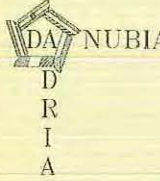
*Program*

Organized by:  
**Italian Association for Stress Analysis (AIAS)**

Co-organized by:  
**Austrian Society of Experimental Strain Analysis (ASESA)**  
**Croatian Society of Mechanics (HDM)**  
**Czechoslovak Society of Mechanics (ČSSM)**  
**Hungarian Scientific Society of Mechanical Engineering**

Organizing Committee:

Austria:	J. Affenzeller (Graz)	R. Beer (Wien)
Croatia:	I. Alfirević (Zagreb)	S. Jecić (Zagreb)
Czechoslovakia:	K. Antropius (Praha)	J. Vísner (Plzeň)
Hungary:	I. Huszár (Gödöllő)	F. Thamm (Budapest)
Italy:	A. Freddi (Bologna)	F. Di Marino (Trieste)- Coordinator



**NINTH DANUBIA - ADRIA SYMPOSIUM**  
on **EXPERIMENTAL METHODS** in **SOLID MECHANICS**

**PROCEEDINGS**

**TRIESTE**  
**OCTOBER 1 - 3, 1992**

Photographs taken at 1992 Trieste Spring Meeting



*Val Rosandra Motel*



*The Scientific Committee*



*Grandi Motori*

PROGRAM

Flute Quartet "Die Zauberflöte" consists of four young flautists who have taken the diploma in 1990 at the Conservatory "Giuseppe Tartini" of Trieste under the guidance of teacher Luisa Sello.

The components often give concerts as soloists or in ensembles of chamber music. They improved flute playing with Raymond Guict, Trevor Wye, Patrick Gallois, Glauco Cambursano, Marzio Conti and chamber music with Alirio Diaz, Aline Fidler and Menahem Meir.

The quartet already played in Friuli - Venezia Giulia and Veneto with the purpose of improve the knowledge of literature for flute ensembles from the Baroque to contemporary age.

A great importance is dedicated to contemporary pages, by emphasizing the differences in style: jazz or rag influences, national background.

The ensemble uses the piccolo and the alt flute too: these instruments give a particular sonority and complete the sound.

- MARC BARTHOMIEU  
Arcadie (1960)
- MARC BERTHOMIEU  
from "Chats..." (1970) : Puma - Chat Perché
- JACQUES CASTÉRÈDE  
Flûte en vacances (1964)
- FABIO NIEDER - SCOTT JOPLIN  
The entertainer (1986)

FLUTE QUARTET "DIE ZAUBERFLÖTE"

- SILVIA DI MARINO - flute, piccolo
- DARIO FADDA - flute, alt flute
- ELENA MOLINARI - flute
- BRUNA FERRARO - flute, alt flute



The Program of the Concert given by F. di Marino and his daughter

the Flute Quartet "Die Zauberflöte"  
Silvia di Marino

# IL PICCOLO

Settimanale per ragazzi 109 - Funzione

Giornale di Trieste

Giovedì 1 ottobre 1992

## CONVEGNO «Danubia Adria»

Da oggi a sabato, si svolge a Trieste il IX Convegno «Danubia Adria» sui metodi sperimentali nella meccanica dei solidi, in merito ai temi legati alla progettazione nel campo dell'ingegneria meccanica. Nell'occasione saranno presentati i risultati delle ricerche svolte dagli studiosi dell'argomento, appartenenti alle cinque associazioni specialistiche nazionali di Austria, Cecoslovacchia, Croazia, Ungheria e Italia, che nell'84 hanno istituito un comitato per favorire le collaborazioni scientifiche tra i ricercatori delle università, dell'industria e dei laboratori di ricerca. Il Convegno, annuale, si svolge a rotazione in uno dei cinque Paesi dell'area danubiana-adriatica e tocca per la prima volta la nostra città. Consistente il supporto organizzativo dato nella circostanza dall'università di Trieste. In programma vi è pure una visita tecnica agli stabilimenti della Divisione motori e del Centro ricerche diesel, della Fiatcantiere.

The invited lecture on *Risk Minimization by Experimental Mechanics* was delivered by Alessandro Freddi. All other contributions were divided into seven sessions:

- A: Fracture Mechanics and Fatigue
- B: Material Behaviour
- C: Optical Methods
- D: Posters
- E: Basic Problems and Industrial Applications
- F: Experimental Methods and Basic Problems
- G: Basic Problems and Applications

Country	Number of papers
Austria	8
Croatia	7
the Czech Republic	3
Hungary	5
Italy	9
Slovakia	3
Germany	6
Kuwait	1
Poland	2
Romania	1
<b>Total</b>	<b>46</b>

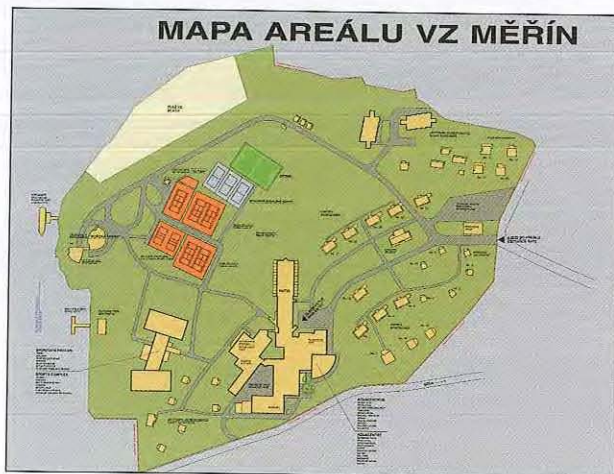
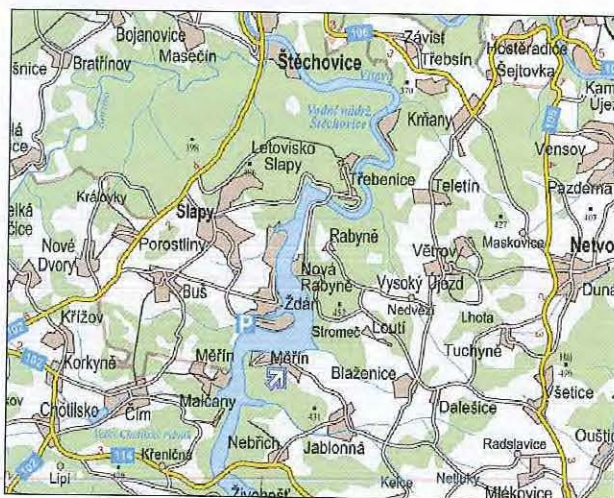
Eighty six authors and co-authors from 10 countries submitted a total of 46 papers.

## THE TENTH DANUBIA-ADRIA SYMPOSIUM

Měříň, the Czech Republic, 1993

The military recreational facility Měříň is located on the right bank of the Slopy Dam, Vltava River, about 60 km south of Prague.

Position of the Měříň Hotel on Slapi Lake, Vltava River



*Position of the Měříň Hotel on Slapi Lake, Vltava River*

The Spring Meeting precedent to the tenth Danubia-Adria Symposium on Experimental Methods in Solid Mechanics took place in Měříň in May 1993.



*The Scientific Committee taken at Měříň Spring Meeting held in May 1993*

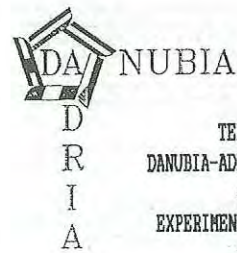
The tenth Danubia-Adria Symposium also took place in Měříň between September 30 and October 2, 1993.



10 th DANUBIA - ADRIA SYMPOSIUM  
on  
EXPERIMENTAL METHODS IN SOLID MECHANICS

PROCEEDINGS

MÉRIN (PRAGUE)  
September 30 - October 2, 1993



TENTH  
DANUBIA-ADRIA-SYMPOSIUM  
on  
EXPERIMENTAL METHODS  
in  
SOLID MECHANICS

1<sup>st</sup> DRAFT

November 30, 1992

Preliminary Announcement

Co-organized by:  
Austrian Society of Experimental Strain Analysis (ASESA)  
Croatian Society of Mechanics (HDM)  
Czech Society of Mechanics (ČSM)  
Hungarian Scientific Society of Mechanical Eng. (GTE)  
Italian Association for Stress Analysis (AIAS)

Sponsored by Czech Society of Mechanics

Organizing Committee

Austria:	J. Affenzeller	(Graz)
	R. Beer	(Wien)
Croatia:	I. Alfirević	(Zagreb)
	S. Jecić	(Zagreb)
Czech Republic:	S. Holý	(Praha)
	J. Višner	(Plzeň)
Hungary:	I. Huszár	(Gödöllő)
	F. Thamm	(Budapest)
Italy:	F. Di Marino	(Trieste)
	A. Freddi	(Bologna)

More than ten years ago representatives of national societies from Austria, Croatia and Hungary initiated establishing the "Danubia-Adria Committee for Experimental Mechanics". Their aim was to organize meetings of scientists, researchers and engineers involved in the field of experimental stress and strain analysis and thus to promote scientific contacts in this field which were rather limited at that time by the political conditions in Europe. The idea was fulfilled in 1984, when the 1st Danubia-Adria Symposium on Experimental Methods in Solid Mechanics held in Stubicke Toplice started a continuous series at the end of which there is now the 10th Symposium in Měříň. When Italy and then later in 1989 Czechoslovakia joined the Danubia-Adria Committee it became clear that scientists anticipated the goals and principles of the Pentagonal (at present Central European) Initiative. It is therefore only logical, that Experimental Mechanics has become one of the first projects endorsed by the Working Group on Science and Technology of this Initiative.

Increasing number of papers submitted to the Symposia by the authors all over the world has demonstrated foresight and vitality of the original ideas as well as the expanding role of experimental mechanics in spite of widely spread numerical methods. It has shown that only simultaneous application of theory, numerical solution and experimental analysis can bring the desired efficiency and put into life structures formerly unrealizable.

The Organizing Committee had a difficult task to

*Proceedings and a part of the Preface*