EUROMECH

EUROPEAN MECHANICS SOCIETY

Final Report
Date:

Please send this report to the Secretary-General of EUROMECH, Professor Bengt Lundberg, School of Engineering, Uppsala University, Box 534, S-751 21 Uppsala, Sweden, within one month after the Colloquium.

General

EUROMECH Colloquium No: 337 Dates: July 11-13, 1995

Title: Plastic flow instabilities at high rates of strain

Co-Chairman: B. DODD

Place and country: METZ, FRANCE

Is there need of another colloquium on the same subject? Which year? 1999

Finance

Conference fee: 650 FF

The fee included: Proceedings (booklet), Lunch, Coffee, tea, Reception, Banquet

Funding: Ministry of Defense, City of Metz, University of Metz, AUMechanics, Moselle Dept.

Accomodation (type and cost): local hotels.

Meals: included (lunch)

Participation

Number of participants from each country:

Austria	1	Germany	7	Rumania	
Belgium		Great Britain	4	Russia	1
Bielorussia		Greece		Slovakia	
Bosnia		Hungary		Slovenia	1
Bulgaria		Ireland		Spain	1
Croatia		Italy		Sweden	
Czech Republic		Latvia		Switzerland	
Denmark		Lithuania		Ukraine	
Estonia		Netherlands	1	Yugoslavia	
Finland		Norway		Others	1
France	22	Poland	1		
Georgia		Portugal		Total	40

Please turn

EUROMECH 337

FINAL REPORT

The Colloquium EUROMECH 337: " Plastic Flow Instabilites at High Rates of Strain" was held at the University of Metz on 10-13 July 1995. The Colloquium venue was the 14th Century Cloister "Cloître des Récollets" in downtown Metz. It was focused on phenomena such as adiabatic shear banding and dynamic ductile fracture, and on their applications to penetration and perforation of plates, dynamic fragmentation of plates and shells, shaped charges, metal cutting, machining and metal forming at high velocities. Not only conventional metallic alloys have been covered, but also more "modern" materials, such as metal matrix composites.

The contributions were all on an invitation basis. They were allocated to the six following themes, each one corresponding to a session of the Colloquium:

- Material behaviour,
- Instabilities,
- Adiabatic localization,
- Experimental techniques and observations,
- Forming processes,
- Shaped charge jets, penetration.

There were only single session presentations, no parallel sessions, no posters. Each talk was given 30 minutes, including discussion. Additional opportunities for exchanges were given in the general discussions closing each session. No proceedings will be published as such.

Very recent, still unpublished, original results were contributed, many of which having not been presented before. The basic theme of the Colloquium (as stated in its title) was covered from various complementary points of view. Experiments and theoretical models (analytical and numerical) were reported. The microstructural as well as the macromechanical continuum aspects were reviewed. Fundamental as well as applied investigations were presented, although the fundamental ones were the more numerous. Due to that variety, it is believed that the Colloquium could be of interest for any expert working in the field.

After a significant number of contributions had been cancelled for various reasons (cuts in funding, airport strikes in Greece, railway strikes in the Czech Republic...), 40 participants finally showed up at the Colloquium, the number of those outside France (19) being nearly half that figure. Many young scientists, most of them never seen before in an international conference, from Austria, France, Germany, Spain and the U.K. contributed to the Colloquium.

Due partly to that relatively small number of participants, the Colloquium could be run in an unformal and released atmosphere. Discussions were very lively, thanks to some experienced participants, capable of sensible and penetrating insights as well as of an attractive way of communicating their views.

The discussions did bring to the attention of the participants the need for two offshoots of this Colloquium, which could possibly be proposed to EUROMECH in the near future. One of theses proposals could be concerned with terminal ballistics in multi-layered composite materials (DODD), the second one with explosive material elaboration and forming processes (PRUEMMER)

The inscription fee was maintained at the relatively low level of 650 FF; it covered the expenses for the rental of the Colloquium venue, the lunches, coffees and refreshments, the reception and banquet, and the cost of the Colloquium booklet edition. The fee was lifted for eastern european participants unable to pay for it, as well as for local students and members of the Metz University. Additional funding was obtained from various french institutions:

- the Ministry of Defense (DRET: Direction de la REcherche et de la Technologie),
- the University of Metz,
- the city of Metz,
- the University Association for Mechanics (Association Universitaire de Mécanique),
- the Moselle regional council.

The additional fee to be paid directly to EUROMECH was obtained from the participants listed on an attached list. The corresponding amount is presently stored on the account of the Treasurer of the University of Metz. An invoice from EUROMECH for the membership of these contributors is needed to transfer it to the Treasurer of EUROMECH, due to the rules of french public accountancy.

It is believed that this Colloquium was very typical of EUROMECH Colloquia, in the scientific programme, in the participation as well as in the released and penetrating discussions it made possible.