EUROMECH

Final Report Date: 13.4.92

Please send this report to the Secretary of the European Mechanics Council, Professor Bengt Lundberg, Dept of Mechanical Engineering, Luleå University of Technology, S-951 87 Luleå, Sweden, one month after the Colloquium

General

Euromech Colloquium No: 289

Title: HYPERSONIC AERODYNAMICS

Chairmen: E. KRAUSE

Place and country: AACHEN, GERMANY

Dates: APRIL 6-8, 1992

Finance

The conference fee 60,-DM included BOOK OF ABSTRACTS, COFFEE & DINNER

Funding: DFG, MAYERSCH BUCH HANDLUNG, PARSYTEC, SIEMENS-NIXDORF

Accomodation (type and cost): HOTELS, SPECIAL PRICE 68,50DM & 85DM

Meals: SELECTED RESTAURANTS

Participation

Total number of participants: 65 Distribution of participants by country:

Code	Country	Number	Code	Country	Number
A	Austria		I	Italy	1
B	Belgium	3	IRL	Ireland	
BG	Bulgaria		N	Norway	
CH	Switzerland		NL	Netherlands	1
CS	Czechoslovakia		P	Portugal	
D	Germany	38	PL	Poland	2
DK	Denmark		R	Rumania	
E	Spain		S	Sweden	6
F	France	7	SF	Finland	
GB	Great Britain	3	YU	Yugoslavia	
GR	Greece		SU	Soviet Union	
H	Hungary		- USA	Others	3
			SW		1

Is there need of another colloquium on the same subject? Which year? Should be continued in 1994

Please turn

The scientific programme of EUROMECH 289 "Hypersonic Aerodynamics" was finally composed of contributions submitted for presentation after two announcements were issued. Five scientists were asked to give general lectures on the topics proposed by the chairman in the announcements. These were "Flow Fields about Configurations", "Transition and Separation in Hypersonic Flow", "Flows in External and Internal Inlets", and "Reacting Nozzle Flows". The general lectures were given by J. Periaux, France, H. Olivier, Germany, C. L. Streett, USA, J. Stollery, UK, and B. Aupoix, France. M. Pandolfi from Italy, who was also asked, had to decline because of other obligations. In addition to the general lectures, 27 contributions were presented, 14 on the first topic, 8 on the second, and 5 on the fourth. No contributions were submitted for the third topic.

Nine of the contributions on the first topic reported on the development and application of numerical solutions for the conservation equations for three-dimensional flows, including chemical reactions, and five on experimental work. These contributions clearly signalized the enormous progress in the computation of three-dimensional hypersonic flow fields, but made also clear, that grid generation and validation are the most important topics in numerical work. The experimental contributions showed, that there is a need for experimental data, especially on hot hypersonic flows.

Large progress could also be noted in the work on transition in hypersonic flow, in particular in the work carried out at NASA Langley. The contributions from the European countries showed, that efforts must be concentrated here, if those of the US are to be matched.

The work on reacting nozzle flow, although difficult, seems to be well under way. Major concern here is the validation of the chemical and thermodynamic aspects of the problem. The computational problems seem to be under control. For axially symmetric flows, numerical methods have become a reliable working tool.

The programme was well received by the participants. Ample time was set aside for discussions, which were vivid and stimulating. The colloquium clearly brought out the necessity, that discussions on numerical and on experimental work should be continued in the way initiated at EUROMECH 289.