

# EUROMECH

EUROPEAN MECHANICS SOCIETY

**Final Report**

**Date:** Aug 14, 1996

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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.

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## General

EUROMECH Colloquium No: 351

Dates: Aug 5-7, 1996

Title: Systems with Coulomb friction

Co-Chairman: Lars-Erik Andersson

Place and country: Vadstena, Sweden

Is there need of another colloquium on the same subject? Which year? 2000

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## Finance

Conference fee: 500 SEK (excl. VAT)

The fee included: Conferenceroom + material

Funding: The Swedish Research Councils for Natural Science and Engineering Science  
60 000 SEK.

Accommodation (type and cost): Vadstena Klosterhotell, Single room: 3100 SEK (excl. VAT)  
Double room: 2750 SEK (excl. VAT)

Meals: The prices above included all meals.

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## Participation

Number of participants from each country:

Austria	_____	Germany	<u>5</u>	Rumania	<u>1</u>
Belgium	_____	Great Britain	<u>3</u>	Russia	<u>1</u>
Bielorussia	_____	Greece	<u>3</u>	Slovakia	_____
Bosnia	_____	Hungary	_____	Slovenia	_____
Bulgaria	<u>1</u>	Ireland	_____	Spain	_____
Croatia	_____	Italy	<u>4</u>	Sweden	<u>12</u>
Czech Republic	<u>1</u>	Latvia	_____	Switzerland	<u>1</u>
Denmark	<u>1</u>	Lithuania	_____	Ukraine	_____
Estonia	_____	Netherlands	<u>1</u>	Yugoslavia	_____
Finland	<u>1</u>	Norway	_____	Others	_____
France	<u>9</u>	Poland	<u>3</u>	USA	<u>3</u>
Georgia	_____	Portugal	_____	Total	<u>50</u>

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## Scientific Report

Coulomb friction or "dry" friction is one of the most basic mechanical phenomena, discussed in virtually every textbook on mechanics. Yet, problems of evolution of deformable or rigid bodies subject to friction and unilateral contact are rich with unsettled questions.

The purpose of the meeting was to bring together mechanicians, mathematicians and engineers and discuss questions related to the qualitative theoretical understanding of systems with Coulomb friction. Related questions on solution algorithms and experiments were also included.

The number of technical presentations during three days was 37. All speakers were given 25 minutes for presentation and discussions. Noticeable is the larger number of application areas treated: finite elements, multibody dynamics, masonry material, wheel-rail contact, squealing brakes, geological faults, automatic control, fretting fatigue and seismic interaction. These applications gave the backbone to the more theoretical questions concerning existence, uniqueness, instability and regularity which were central to the meeting. Concrete new results were presented which has promoted the development of more a complete theory for the mechanics of deformable and rigid bodies being affected by Coulomb friction or its generalizations: as a specific example we like to mentioned how the existence question in linear elasticity was taken on step further by a paper of Eck & Jarusek.



Anders Klarbring