

### Scope of Research

The GARTEUR (Groupe Aeronautical and Technical Research in Europe) has established the activity group 25 on the above mentioned topic. Members are

- Aerospatiale-Matra(Airbus,EADS),Toulouse,F
- Bae Military Aircraft,Farnborough,UK
- CIRA(Italien Aerospace Center),Capua,I
- DERA(Defence Evaluation and Research Agency), Farnborough,UK
- DLR(Deutsche Gesellschaft für Luft- und Raumfahrt, Institut für Strukturmechanik),Braunschweig,D
- FFA(The Aeronautical Research Institute of Sweden), Bromma,S
- KTH(Royal Institute of Technology),Stockholm,S
- MECALOG,Sophia Antipolis,F
- NLR(National Aerospace Laboratory, Structures Technology Department),Amsterdam,NL
- SAAB Military Aircraft AB,Linköping,S
- Samtech S.A.,Liege,B
- University of Karlsruhe(Institut für Baustatik), Karlsruhe,D

The objectives of the collaboration are the establishment of recommendations for buckling, postbuckling and collapse analysis of aerospace structures. A round-robin investigation of the buckling, postbuckling and collapse behaviour will be performed for a number of benchmarks. The benchmarks are already performed tests with well documented test setups and test results, provided by some members of the activity group. The results from the investigation will delineate the need to improve existing strategies for testing and modelling and to refine used methodologies.

### Benchmark 1

This benchmark is a flat stiffened aluminium panel under compression. The structure is a part of the fuselage of an Airbus A340. The tests are performed at Aerospatiale.



Fig. 1: Experiment: initial panel

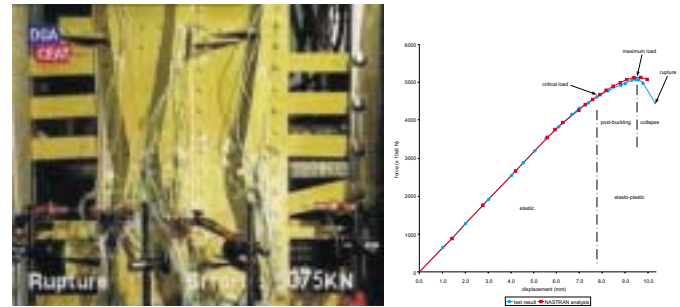


Fig. 2: Experiment: collapsed panel, Calculations

### Benchmark 2

This benchmark is a shear loaded thin integral web beam. It may be a part of a Saab Aircraft. The experiments are performed at Saab, Linköping.



Fig. 4: Experiment

### Benchmark 3

Here, we discuss the behaviour of a compressed curved stiffened composite shell. This structure is a part of a satellite. The experiments were carried out at DLR, Braunschweig.

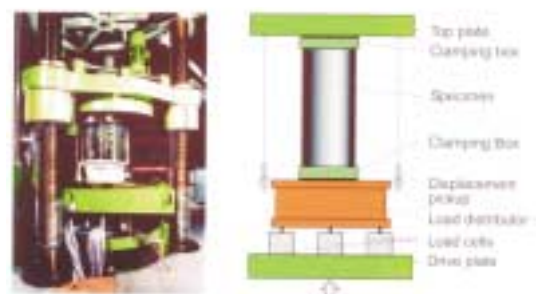


Fig. 4: Experiment

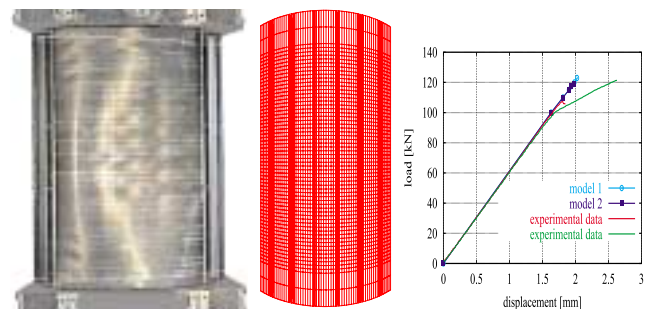


Fig. 5: Buckled panel, FE-mesh and Calculations