

## **Invited Session (IS)**

### **Title of the IS:**

*Damage modelling of concrete structures under extreme loading conditions*

### **Organizers:**

Michael Kaliske, Institute for Structural Analysis, Technische Universität Dresden

Anna Pandolfi, Dipartimento di Ingegneria Civile ed Ambientale, Politecnico di Milano

Michael Ortiz, Division of Aeronautics, California Institute of Technology

Bert Sluys, Faculty of Civil Engineering and Geosciences, Delft University of Technology

The Invited Session addresses the theoretical-numerical description of concrete structures at extreme loading scenarios. Nowadays, large infrastructures are mainly built by concrete as construction material. The resilience and integrity of these constructions need to be guaranteed at least at a certain level and for a certain time after extreme, i.e., catastrophic loading. The prediction of the non-trivial structural response can be pursued by means of numerical simulations, that can be employed in the structural design. To achieve this goal, reliable computational approaches and coupled methods need to be developed and made efficient for practical use. Since multiple aspects have to be considered, simulation capabilities typical of several research fields must be assembled. In the light of extreme loadings on concrete structures, contributions on the following topics are welcome:

- multi-physical concrete descriptions,
- innovative concrete composites,
- nonlocal damage formulations,
- phase-field approaches,
- fracture mechanics,
- impact, explosive, fire loadings,
- dynamical loadings.