

## STRUCTURES UNDER EXTREME LOADS

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### ABSTRACT

The study of extreme loads on structures has become important during the last decades due to the large amount of natural, accidental and intentional events occurring worldwide indicating the relevance of the topic in structural design and reliability analysis. Consequently, extensive investigations have been developed in these fields. This research is important not only because it helps understanding the damage caused by extreme loads on structures and buildings but also because it allows predicting structures vulnerability under these types of load and developing new resistant materials and protective structures.

Research in this area has been oriented toward different targets: protecting new or existing structures against extreme loads, retrofitting structures damaged by extreme loads or assessing extreme loads characteristics from the damage caused on surrounding structures.

In any case, it is important to understand the behaviour and to be able to predict the response of materials structures and protective elements under these types of load. Due to the complexity of the phenomena involved numerical simulation should normally be used for these purposes.

The objective of this mini symposium is to present the latest tendencies and challenges in the numerical simulation of extreme loads on structures. Extreme loads include but are not restricted to impulsive loads, blast, impact, seismic, wind and fire. The numerical simulation of the extreme actions themselves and different materials, particularly new composite materials, and structures behaviour under these types of loads are the main focuses.