

Structural Behaviour and Risks for Exceptional Loadings

While accidents are unavoidable, inadequate preparation can turn an accident into a disaster. Accurately anticipating the resulting damage from an accident incident allows the employment of mitigation measures that can prevent escalation into catastrophic destruction. The Fraunhofer Institute for Transient Dynamic Proceedings of the Ernst Mach Institute uses available technology and knowledge to predict potential damage from explosions to masonry and reinforced-concrete constructions with glass covers or facades. Damage to both reinforced and unreinforced masonry can be predicted using existing design rules. Damage to reinforced concrete can be calculated using FE codes. The extent of the explosive damage can be reduced by retrofitting existing constructions with fiber-based composite materials with resilient, energy-absorbing properties, such as foam concrete or plastic concrete, or using high-capacity materials such as reinforced SIFCON for those critical parts of the structure that control stability.