

SOME DEVELOPMENTS IN COMPUTATIONAL MODELLING OF SAFETY CRITICAL STRUCTURES

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Abstract: Several developments in computational modelling of safety critical structures are considered. Modelling of the exposure of concrete to highly elevated temperatures is treated through a thermo-mechanical modelling framework (T-M) which is extended to include the full thermo-hygro-mechanical coupling (T-H-M), in order to account for the development of spallation pressures. Such T-H-M frameworks comprise modelling of the underlying coupled processes -typically formulated in a macroscopic continuum setting -and augmented by additional phenomenological relations. Further developments include both considerations of the multiscale nature of the associated degradation processes, as well as the importance of the discrete, discontinuous nature of evolving fractures and existing discontinuities within blocky structural assemblies.

Key words: Computational modelling, Safety critical structures.



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