



Technische
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Vortrag im Gästeprogramm des GRK 2075 -
Modelle für die Beschreibung der Zustandsänderung bei Alterung von Baustoffen

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Modelling of existing reinforced concrete structures

Dienstag, 11.09.2018, 10.00 Uhr

Institute für Baustoffe, Massivbau und Brandschutz – Fachgebiet Massivbau
Beethovenstraße 52, Konferenzraum, 3. OG

Nonlinear finite element analyses are widely used for the modelling of existing reinforced concrete structures. Guidelines and new generation of standard codes introduce the verification of structures assisted by numerical simulations and safety formats for nonlinear analyses.

It is widely recognized that in case of members designed with obsolete codes or members non-conforming with details imposed by standard codes, analytical calculations can provide un-conservative or over-conservative resistances. For examples, formulation provided by codes (in particular for shear critical members) can be based on the fitting of experimental results carried out on specimens not matching the details typical of existing structures. In other cases, internal stress redistribution, membrane action effects, etc., can play an important role which cannot be detected by methods based on linear behaviour hypotheses adopted for materials.

On the other hands the complexity of nonlinear finite element procedure could lead to user mistakes that could cause un-conservative verifications. Therefore, the model uncertainties, the software capabilities and the user skill should be controlled by adopting guidelines enabling software users to optimize their modelling strategy. The presentation illustrates constitutive models and crack models usually adopted in software and PARC_CL2.0 crack model implemented at the University of Parma.

In particular, some case studies object of an Italian PRIN project founded by the Italian Ministry of Public Research on the assessment of existing RC structures non-conforming to detailing rules or subjected to damage deterioration, like corrosion, will be illustrated.

Kontakt

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