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Connection between bubble decks - nonlinear analysis

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A Bubble Deck functions as a biaxial hollow slab, in which plastic balls serve the purpose of eliminating concrete that has limited load carrying effect. Hence, the concept reduces the deadweight considerably, while the strength is maintained. This type of concrete flat-slab has recently been introduced in Norway, and there is a need to gain experience and knowledge, in particular concerning reinforcement layout and strength along connection lines. The study aims at investigating the mechanical behaviour of such connections, when being subjected to bending. Laboratory testing of 8 full-scale connections will be carried out. The experimental set-up and the test procedure will be simulated by DIANA, in order to reproduce the failure mechanisms. Based on this validation of the structural modelling, common solutions of biaxially loaded bubble decks will be studied numerically.