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   Sommario/riassunto Long description: This work aims at developing a numerical simulation
                       method, Soft PARticle Code (SPARC). The term textitsoft emphasizes
                       that no boundaries between particles are defined and every particle
                       possesses a support consisting of a set of adjacent particles. The
                       polynomial interpolation/approximation method is utilized for the
                       evaluation of spatial derivatives using the information carried by
                       particles in supports. The system of equations consisting of spatial
                       derivatives is solved using an iterative nonlinear solver and the
                       computation of the Jacobian matrix is parallelized. The simulations of
                       laboratory tests have been carried out to show the applications and
                       limitations of the current version of SPARC. In addition to the
                       simulations, laboratory (zig-zag) model tests using fine sand were
                       carried out, in which the cyclic tilt of a retaining wall induces a peculiar
                       motion in the backfill (sand), with closed trajectories (eddies).