

## RECENT PROGRESS IN CONTINUUM-KINEMATICS-INSPIRED PERIDYNAMICS

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**Abstract.** We will report on progress in our recently proposed geometrically exact continuum-kinematics-inspired peridynamics (CPD) formulation. The novel CPD respects the well-established classical continuum kinematics, accounts for large deformations and is variationally consistent. We distinguish between one-, two- and three-neighbour interactions. One-neighbour interactions recover the original (bond-based) PD formalism. Two- and three neighbour interactions are fundamentally different to state-based PD. We account for material frame indifference and provide a set of appropriate arguments for objective interaction potentials accordingly. We will present CPD in a manner that is immediately suitable for computational implementation. From a computational perspective, the proposed strategy is fully implicit and quadratic convergence associated with the Newton–Raphson scheme is observed. Finally, we demonstrate the capability of our proposed framework via a series of applications and numerical examples at large deformations.