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A MESHFREE UNIFICATION: REPRODUCING KERNEL PERIDYNAMICS

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The first investigation establishing the link between the meshfree state-based peridynamics [1] method and other meshfree methods [2, 3, 4] will be presented. It was concluded that the discretization of state-based peridynamics leads directly to an approximation of the derivatives that can be obtained from the reproducing kernel particle method (RKPM) [3]. However, state-based peridynamics obtains the same result at a significantly lower computational cost which motivates its use in large-scale computations.

In light of the findings of this study, an update of the method was proposed such that the limitations regarding application of boundary conditions and the use of non-uniform grids are corrected by using the reproducing kernel approximation. This method was named reproducing kernel peridynamics (RK-peridynamics) [5].

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