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Hae-Soo Oh* (hso@uncc.edu), 9201 University City Blvd, Charlotte, NC 28223-0001, and
Jae-Woo Jeong (jwjeong@uncc.edu), Chalotte, NC 28223-0001. *Reproducing
Polynomial(Singularity) Particle Methods and Adaptive Meshless Methods for 2-Dim Elliptic
Boundary Value Problems*. Preliminary report.

Oh et al introduced the reproducing polynomial particle (RPP) shape functions that are piecewise polynomial and satisfy the Kronecker delta property. In this paper, we introduce RPPM (Reproducing Polynomial Particle Methods) that is the Galerkin approximation method associated with the use of the RPP approximation space. Planting particles in the computation domain in a patchwise uniform manner, we also introduce patchwise RPPM. Furthermore, constructing partition of unity functions with flat-top adaptively, we introduce adaptive patchwise RPPM and compare it with RSPM (Reproducing Singularity Particle Methods) that is the Galerkin approximation method associated with the use of reproducing singularity particle (RSP) shape functions. (Received January 14, 2008)