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Jiewon Park* (jiewon@mit.edu). *A smooth analogue for the distance function for Ricci curvature.*

We study a smooth analogue of the distance function on a complete Riemannian manifold of Ricci curvature bounded below. We discuss the properties of this function such as various monotonicity formulae and a gradient bound, following the work of Colding. We then prove a matrix Harnack inequality in the case of parallel Ricci curvature under an additional bound on the sectional curvature. This is an analogue of the many matrix Harnack inequalities obtained by Hamilton and Li-Cao in different time-dependent settings. (Received January 25, 2019)