1095-53-107 **Maree Jaramillo***, Department of Mathematics, University of California, Santa Barbara, Santa Barbara, CA 93106. *Fundamental Groups of Spaces with Bakry-Emery Ricci Tensor Bounded Below.*

The Bakry-Emery Ricci tensor is a natural extension of Ricci curvature on smooth metric measure spaces. Since topological and geometric information can be obtained for manifolds with Ricci curvature bounded from below, it is natural to ask if the same information holds true for smooth metric measure spaces with Bakry-Emery Ricci tensor bounded from below. Using Guofang Wei and Will Wylie's comparison theorems and an extension of Kevin Brighton's gradient estimate on smooth metric measure spaces, we extend the Almost Splitting Theorem of Cheeger-Colding to the smooth metric space setting. Using this Almost Splitting theorem, we show that the fundamental group of the smooth metric measure space with a lower bound on volume has almost abelian fundamental group. We also show that the number of generators of the fundamental group of a smooth metric measure space with Bakry-Emery Ricci tensor bounded from below is uniformly bounded. The results on the fundamental group are extensions of theorems which hold for Riemannian manifolds with Ricci curvature bounded from below. (Received September 03, 2013)