Meeting: 1003, Atlanta, Georgia, SS 11A, AMS Special Session on Riemannian Geometry, I

1003-53-1474 **Stephanie B. Alexander*** (sba@math.uiuc.edu), Math. Dept., 1409 West Green St., Urbana, IL 61801, and **Richard L. Bishop** (bishop@math.uiuc.edu), Math. Dept., 1409 West Green St., Urbana, IL 61801. *Curvature and injectivity radius of subspaces in spaces of curvature bounded above.* Preliminary report.

A subset N of a geodesic metric space M has *extrinsic curvature* $< A$ if intrinsic distances $d_N = s$ and extrinsic distances $d_M = r$ satisfy $s - r \leq \frac{A^2}{24} r^3 + o(r^3)$. Equivalently, for any $\epsilon > 0$ and for s sufficiently small, r is greater than the distance in the Euclidean plane between the endpoints of a circular arc of length s and curvature $A + \epsilon$. For Riemannian submanifolds, this is the same as a bound, $|II| < A$, on the second fundamental form. Specific estimates are given for the intrinsic curvature and injectivity radius of N when M is an Alexandrov space of curvature $\leq K$. Even for Riemannian submanifolds, this injectivity radius estimate is new as far as we know. (Received October 05, 2004)