1030-53-195   **Bruce Solomon*** (`solomon@indiana.edu`), Math Department, Indiana University, Bloomington, IN 47405. *Symmetric planar intersections characterize quadrics among certain tubes in* $\mathbf{R}^3$. Preliminary report.

Suppose a smooth surface X in $\mathbf{R}^3$ has the following property: Every compact, transverse intersection of X with a plane is centrally symmetric, i.e., invariant under reflection through its center of mass. Some 90 years ago Blaschke proved that a *positively* curved surface with this property must be quadric. But *negatively* curved quadrics have the same property—does it characterize them too? We delineate a broad class of tubes that includes all convex cones and surfaces of revolution, and prove that within this class, the answer is yes. Our method seems to produce a new global affine invariant of convex plane loops. As an application, we deduce that tubes in our class admit skewloops—loops having no pair of parallel tangent lines—iff they are *not* quadric. (Received August 02, 2007)