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Judith A. Silver* (silver@marshall.edu), Department of Mathematics, Marshall University, One John Marshall Drive, Huntington, WV 25701, and **Anna Mummert**, **Donald W. Silver** and **Leah Treadaway Billo**. *Conics on a Sphere*.

In this presentation we investigate conics (ellipses, parabolas, and hyperbolas) on a sphere, by extending the projective geometry definition for conics on a plane. In projective geometry, a two-dimensional planar conic can be defined as the locus of intersection points of two pencils of lines. A pencil of lines is the set all lines through a given point. We describe two different methods to generate planar conics using pencils of lines, one method easily generates circles and transformations of $y = 1/x$, and the other easily generates ellipses and other hyperbolas. The two generation methods are extended to the spherical case. Conics on a sphere are defined as the locus of intersection points of two pencils of great circles. We provide a *Mathematica* program to visualize conics on a sphere. In the spherical case, there is no clear graphical distinction between ellipses, parabolas, and hyperbolas; they can, however, be distinguished by analyzing the generating lines. (Received September 21, 2012)