1047-53-202   **Ivan C Sterling*** (`isterling@smcm.edu`), Mathematics and Computer Science Department, St Mary's College of Maryland, St Mary's City, MD 20686-3001, and **Josef Dorfmeister** and **Thomas Ivey**. *Visualizing Pseudo-Spherical Cone Points.* Preliminary report.

We study symmetries of psuedospherical surfaces (ps-surfaces) in $\mathbb{R}^3$ via the loop group method developed by Sacharov-Shabot , Terng-Uhlenbeck and Toda. These are surfaces with Gauss curvature $K = -1$. We are particularly interested in examples of ps-surfaces of non-finite type. A rather complete investigation of ps-surfaces of finite-type is Melko-Sterling in 1990. In particular we find the $K = -1$ analogues of CMC-umbilics which has been a long-standing hurdle in the effort to find non-finite type examples of ps-surfaces. Computer visualization played an integral role in the eventual theoretical discovery of these new and promising examples. (Received January 28, 2009)