1100-30-102 **Tom D Downs*** (proftddowns@msn.com), 12411 Calico Falls Lane, Houston, TX 77041. *Complex Functions and Spherical Regression.*

Polar forms below provide insight and clarity into potential uses of the bilinear functions Mc for dealing with otherwise difficult or insurmountable problems. Let S be a Reimann sphere centered at the origin 0 of a Euclidean space with an xyt rectangular coordinate system and horizontal extended complex equatorial plane C. The vertical polar axis of S is the t-axis, which intersects S at the poles n=(001) and s=(00-1), and C at 0. This is a rigid configuration. Stereographic projections map unit vectors Z=(xyt) on S to points z=x+iy on C, and vice versa, when the 3 points n,Z,z are collinear. The points n on S and ∞ on C are designated images of one another. Bilinear functions Mc map C on to itself and form a group G1 under composition of mappings; their matrix images also form a group under matrix multiplication. The spherical images M of the Mc operate on points Z on S to form a group G2 under composition of mappings. G2 is isomorphic to G1. For any Mc in G1 the identity Mc $\equiv$ {Mc/$\sqrt{}$(Mc*Mc)}x{$\sqrt{}$(Mc*Mc)} = {Uc}x{Hc} holds, where* means the conjugate transpose of Mc, Uc is unitary, and Hc is pos. def. hermitian with decomposition Hc = B*ΔB where B is unitary and Δ is diagonal. Analogous decompositions apply to the images M of G2. (Received February 03, 2014)