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Mary D Shepherd* (shephemd@potdam.edu), Department of Mathematics, SUNY-College at Potsdam, Potsdam, NY 13676. *Spherical Line Congruences and the Sinh-Gordon Equation*. Preliminary report.

It has long been known that surfaces of constant negative Gaussian curvature correspond to solutions to the nonlinear partial differential equation, the Sinh-Gordon Equation. Knowing one solution and applying a Bäcklund transformation gives a family of other solutions. Using Bianchi permutability, additional solutions can be obtained. The analysis of these transformations is simplified when studied using the method of moving frames on surfaces in the space of lines. These surfaces are called line congruences. This is a report on applying similar methods—moving frames on surfaces in the space of lines—to study transformations of surfaces of constant positive curvature, which in some sense correspond to solutions to the Sinh-Gordon equation. This work describes how a Bäcklund transformation applied to a surface of constant positive Gaussian gives an imaginary surface, and how a second transformation, under certain conditions and Bianchi permutability gives back a real surface with constant positive Gaussian curvature. (Received July 25, 2000)