Topologically Embedded Pseudospherical Surfaces

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It is known that the class of traveling wave solutions of the sine-Gordon equation is in 1-1 correspondence with the class of (necessarily singular) pseudospherical helicoids, i.e., pseudospherical surfaces in Euclidean space with screw-motion symmetry. We illustrate our solution to the problem of explicitly describing all pseudospherical helicoids posed by A. Popov in [Lobachevsky Geometry and Modern Nonlinear Problems, Birkhäuser, Cham, 2014]. As an application, countably many continuous families of topologically embedded pseudospherical helicoids are constructed. This is joint work with Emilio Musso.