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Isometric Families of Minimal Surfaces[1] STEPHEN TAYLOR, BYU Dept of Math and Physics, BYU MINIMAL SURFACE GROUP COLLABORATION — We consider a minimal surface M immersed in R^3 with induced metric $g = \psi\delta_2$ where δ_2 is the two dimensional Euclidean metric and 2ψ is a scalar. We then construct a system of partial differential equations that constrain M to lift to a minimal surface via the Weierstrauss- Enneper representation demanding the metric is of the above form. It is concluded that associated surfaces connecting the prescribed minimal surface and its conjugate surface satisfy the system. Moreover, we find a non-trivial symmetry of the system that generates a one parameter family of surfaces isometric to a specified minimal surface. We demonstrate an instance of the analysis for the catenoid ($\psi = \cosh^2(v)$), and comment on potential generalizations to a Lorentzian manifolds in a general relativistic setting.

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