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Immersion formulas obtained via the generalized symmetry approach

This talk is devoted to a study of the connections between three different analytic descriptions for the immersion functions of 2D soliton surfaces corresponding to the following three types of symmetries: gauge symmetries of the linear spectral problem, conformal transformations in the spectral parameter and generalized symmetries of the associated integrable system. We present the necessary and sufficient conditions under which the immersion formulas associated with these symmetries are linked by gauge transformations. We illustrate the theoretical results by examples involving the $\mathbb{C}P^{(N-1)}$ sigma model.