Simultaneous unitarizability of $SL_n\mathbb{C}$-valued maps, and constant mean curvature k-noid monodromy

WAYNE ROSSMAN AND NICHOLAS SCHMITT

Dedicated to Professor Takeshi Sasaki on his sixtieth birthday

Abstract. We give necessary and sufficient local conditions for the simultaneous unitarizability of a set of analytic matrix maps from an analytic 1-manifold into $SL_n\mathbb{C}$ under conjugation by a single analytic matrix map.

We apply this result to the monodromy arising from an integrable partial differential equation to construct a family of k-noids, genus-zero constant mean curvature surfaces with three or more ends in Euclidean, spherical and hyperbolic 3-spaces.