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Regularity of CR maps into uniformly pseudoconvex hypersurfaces and applications to proper holomorphic maps

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Abstract. We study regularity properties of CR maps in positive codimension valued in pseudoconvex manifolds which carry a nontrivial Levi foliation. We introduce an invariant which can be used to deduce that any sufficiently regular CR map from a minimal manifold into such a foliated target is either generically smooth or geometrically highly constrained, and to show generic smoothness of sufficiently regular CR transversal CR maps between pseudoconvex hypersurfaces. As an application, we discuss boundary regularity of proper holomorphic maps into bounded symmetric domains.