Title: CR geometry and conformal foliations

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Abstract: A smooth unit vector field in Euclidean three-space is said to be transversally conformal if and only if its Lie derivative preserves the conformal metric orthogonal to its integral curves. Equivalently, a foliation by smooth curves in Euclidean three-space is said to be conformal if and only if it can be locally defined by a complex-valued function with null gradient. There is a well-known circle of ideas surrounding such foliations, derived from twistor theory, and involving the CR geometry of the standard Leviindefinite hyperquadric in complex projective three-space. I shall discuss this circle of ideas and, in particular, show that locally the general real-analytic null one-form on Euclidean three-space can be constructed from a holomorphic function of two complex variables. This is joint work with Paul Baird.