

AN INTRODUCTION TO CR GEOMETRY AND SUBELLIPTIC HARMONIC MAPS

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ABSTRACT. We give an elementary introduction to CR and pseudohermitian geometry, starting from H. Lewy's legacy i.e. tangential Cauchy-Riemann equations on the boundary of the Siegel domain. In this context we shall describe fundamental objects, such as contact structures, Levi forms, the Tanaka-Webster connection and the Fefferman metric. Also naturally arising Hörmander systems of vector fields, the associated sublaplacians, and J. Jost and C-J. Xu's subelliptic harmonic maps, a first geometric interpretation of which is given in terms of Lorentzian geometry. A second, more specialized talk - scheduled for the afternoon of the same day - will be devoted to the discussion of boundary values of Bergman-harmonic maps leading to a second geometric interpretation of subelliptic harmonic maps.

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