

1077-35-1093

Gino Biondini* (biondini@buffalo.edu), SUNY Buffalo, Math Dept, Buffalo, NY 14260, and
Gregor Kovacic. *On the Maxwell-Bloch equations with non-zero boundary conditions.*

The inverse scattering transform for the Maxwell-Bloch equations with non-zero boundary conditions for the electric field is presented. The direct problem is formulated on a two-sheeted, genus-zero Riemann surface. The symmetries and the evolution of the scattering data are obtained, the inverse problem is formulated as a Riemann-Hilbert problem, and explicit formulae are obtained for the reflectionless solutions. Throughout, the similarities and differences with the case of zero boundary conditions are pointed out. (Received September 16, 2011)