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**Zhijun Qiao\*** (qiao@lanl.gov), 2005A, 22nd Street, Los Alamos, NM 87544. *An Integrable Hierarchy and Its Exact Solution*. Preliminary report.

In this talk, I will first show how to generate nonlinear integrable PDEs from a given eigenvalue problem, then connect integrable PDEs to finite-dimensional integrable Hamiltonian systems. Furthermore, the constrained method is used to obtain the parametric solution and algebro-geometric solution of the nonlinear PDEs. I will show the concrete procedure through the Camassa-Holm equation. The methods of constraint and  $r$ -matrix and algebro-geometric tools are involved. (Received January 13, 2004)