Threshold resonance effects for $1/R^3$ **long-range potentials**[1] DI
SHU, IONEL SIMBOTIN, JIA WANG, ROBIN CÔTÉ, Department of Physics,
University of Connecticut — We investigate systematically the threshold behavior
of scattering cross sections for attractive potentials which have an asymptotic dependence of the type $V(R) \approx -C_3/R^3$. We present numerical results and a theoretical
analysis in terms of Jost functions, and we pay close attention to the effects due to
near threshold resonances (NTR). Although we restrict our analysis to the single
channel case, we show that it is also relevant for the case of weakly coupled many
channel problems; in particular, we show that the NTR effects for inelastic scattering can be deduced from the single channel case. Our study could help to identify
universal physics in the two-body and three-body systems.

Di Shu
University of Connecticut

Date submitted: 31 Jan 2014   Electronic form version 1.4