Renormalization of Inverse Power Law Potentials[1] DANIEL
ODELL, LUCAS PLATTER, Univ of Tennessee, Knoxville — Inverse power law
potentials of the form $1/r^n$ play a central role in nuclear and atomic physics. For
$n \geq 2$, their singularity requires an additional boundary condition to solve the 2-
body system. I will present the results of examining the renormalization process
for these highly singular potentials in the 3-body sector. The results are focused
on two particular scenarios. First, I will address the renormalization of the $1/r^3$
potential as it represents the most singular term of the one-pion-exchange potential.
I will discuss the necessity of a 3-body force in the 2 and 3-body sectors, basing
my conclusions on calculations of bound state and scattering observables. Second,
I will discuss the renormalization of van der Waals systems. These systems exhibit
universal properties known to exist for a large scattering length which I will also
address.

Daniel Odell
Univ of Tennessee, Knoxville

Electronic form version 1.4