A new method for calculation of Efimov resonances[1] FRANCOISE
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France, JUAN BLANDON, VIATCHESLAV KOKOOULINE, Dept. of Physics,
University of Central Florida, Orlando, Florida 32816 — The recent observation
of Efimov resonances in a cold gas [1] opens a new field. We have developed a
method to calculate accurately the positions, widths and wave functions of three-
body resonances. The calculations combine the hyperspherical adiabatic approach
[2] and the slow variable discretization method of Ref.[3]. A sine grid basis set is
used with a mapping procedure to introduce a variable grid step in the hyper-radius
and in the two hyperangles; moreover, a complex absorbing potential is introduced.
The method can be used to determine accurately both the short range and the
long range wavefunctions. It has been checked on a model potential and com-
pared with a R-matrix method [4] which necessitates a much larger basis set: the
two calculations are in good agreement. [1] T. Kraemer *et al.*, Nature **440**, 315
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29, L389 (1996), [4] E. Nielsen, H. Suno, and B. D. Esry, Phys. Rev. A **66**, 012705
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