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Resonance structure in the dipositronium molecule JOSEPH DI RIENZI, College of Notre Dame of Maryland, RICHARD DRACHMAN, NASA-Goddard Space Flight Center — We are investigating the resonances, first reported by Adhikari [1], occurring in the scattering of pairs of positronium atoms. In particular, we are testing the hypothesis that these resonances occur at energies corresponding to "bound" states of the positronium ion (either positive or negative) and an electron or positron, respectively. The potential producing the binding is Coulombic at large distances and modified at small distances. Such a model was successful in the analogous case of Ps-H scattering [2], and it would be interesting if it also worked in the present case. A complication in the dipositronium system is that the two positive particles (positrons) are identical, whereas in the Ps-H case the positive particles (positron and proton) are distinct.

[1] S. H. Adhikari, Phys. Lett.A **294,** 308 (2002).
[2] J. Di Rienzi and R. J. Drachman, Phys. Rev. A **65**, 032721 (2002); R. J. Drachman, *ibid* **19**, 1900 (1979).

Richard Drachman
NASA-Goddard Space Flight Center

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