

# Bound States, including Dipositronium and other Polyleptons

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Present knowledge of bound states of positrons with *koino*-atoms and -molecules is gotten mostly from quantum mechanical calculations, but recently some new experimental techniques have begun to yield results as well. We review all this work, and indicate future directions.

Understandably, most of the systems studied so far contain only one positron. As new positron sources become available, we should expect multi-positron systems to be characterized both theoretically and experimentally. In particular, diatomic positronium,  $\text{Ps}_2$ , is of special interest. Although its stability against dissociation was established almost sixty years ago [1], only last year [2] was the structure of the wave functions in Cartesian-plus-spin space elucidated for the lower bound states. We review this work and its extensions to other polyleptons.

[1] E. A. Hylleraas and A. Ore, Phys. Rev. **71**, 493 (1947).

[2] D. M. Schrader, Phys. Rev. Lett. **92**, 043401 (2004).