

QUEST FOR A GENUINE QUADRUPLE BOND BETWEEN TWO MAIN-GROUP ATOMS

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The maximum bond multiplicity between two main group atoms is generally assumed to be three. A few years ago, a quadruple bond was proposed for the ground state of C_2 , but this was disputed by several groups. I report theoretical studies of diatomic species AeE , where Ae is an alkaline earth atom $Be - Ba$ and E is a neutral or charged main group atom. The results suggest that in some systems there are four attractive orbital interactions that have unusual features.