

## CONNECTION BETWEEN THE $SU(3)$ ALGEBRAIC MODEL AND CONFIGURATION SPACE FOR BENDING MODES OF LINEAR MOLECULES: APPLICATION TO ACETYLENE

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An approach to connect the  $su(3)$  dynamical group- used to describe the bending modes of linear molecules- with configuration space is discussed. The  $SU(3)$  group may be seen as a consequence of adding a scalar boson to the  $SU(2)$  space of two degenerate harmonic oscillators. The resulting  $SU(3)$  group becomes the dynamical group for the bending degrees of freedom of linear molecules, but the connection to configuration space is not obvious. This work aims at providing this connection. Our approach is based on the basis of establishing a mapping between the algebraic and configuration states. An arbitrary operator in configuration space is then expanded in terms of generators of the dynamical algebra. The coefficients are determined through a minimization procedure and given in terms of matrix elements defined in configuration space. As an application we consider the vibrational description of the bending modes of the acetylene molecule, where the force constants are estimated in the framework of the  $U(3) \times U(3)$  model.