

Four different non-orthogonal basis sets are studied and compared in order to obtain the resonance properties of a model scattering problem. In particular, two types of Gaussian basis sets, one B-spline basis set and one hybrid Gaussian - B-spline basis set. Their ability to represent the scattering continuum is investigated along with their numerical properties. Particular attention is paid to the energy range within which each basis set gives reasonably accurate values of the phase shift and the decay width. The radial Schrödinger equation is solved by the Löwdin's symmetric orthogonalization method and the decay width is extracted by the Stieltjes imaging procedure. The R-matrix method within the framework of Feshbach-Fano projection operator formalism with polynomial basis set is utilized as a numerically exact reference method.