ABSTRACT

The theory of the transfer matrix for one-dimensional potential wells is developed, and the conditions under which a coefficient representation and a state-vector representation may be valid, are discussed. A new method, called the 'step' method, is proposed for evaluating the transfer matrices across localized and non-localized "atomic" potentials. The method is applied to some particular potentials, and the numerical results are tabulated. In the case of localized potential wells, a comparison of these results with the transfer matrix of the isolated δ-function potential yields numerical values for the strength of the δ-function.

In the case of non-localized potentials this comparison is shown to be impossible. The consequences of this regarding Borland's localization Theorem are then studied.