ON THE ASYMPTOTIC SOLUTIONS OF THE TWO COULOMB CENTERS PROBLEM AT SMALL INTERCENTER SEPARATION

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The expansions of a Green's function for the two Coulomb center potential in Coulomb spheroidal functions are built, and the expansion in associated Legendre polynomials for angular Coulomb spheroidal functions is used. In the limit of small intercenter distances, the analytic expressions for coefficients of these expansions are obtained. The solutions of a degenerate hypergeometric equation are used as a basis function system while expanding regular and irregular Coulomb spheroidal functions into series.