

JB3 Elementary Solutions of Coupled Kinetic Equations and the Temperature-Slip Problem.\* J. T. KREISE, Oak Ridge National Laboratory, T. S. CHANG, and C. E. SIEWERT, North Carolina State U.--The Method of elementary solutions is employed to solve two coupled integro-differential equations sufficient for determining temperature-density effects in a linearized BCK model in the kinetic theory of gases<sup>1</sup>. Full-range completeness and orthogonality theorems are proved for the developed elementary solutions or singular eigenfunctions and the infinite-medium Green's function is constructed as an illustration of the full-range formalism. The appropriate homogeneous matrix Riemann problem is discussed, and half-range completeness and orthogonality theorems are proved for a certain subset of the normal modes. The required existence and uniqueness theorems relevant to the  $H$ -matrix, basic to the half-range analysis, are proved, and an accurate and efficient computational method is discussed. The half-space temperature-slip problem is solved analytically, and a highly accurate value of the temperature-slip coefficient is reported.

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<sup>1</sup>J. T. Kriese, T. S. Chang, and C. E. Siewert, Int. Jour. Eng. Science (in press).