A GENERALIZED SPEED-DEPENDENT LINE PROFILE COMBINING SOFT AND HARD PARTIALLY-CORRELATED DICKE-NARROWING COLLISIONS

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In a classical treatise, Rautian and Sobelman [a] discussed a number of Dicke-narrowed spectral profiles incorporating strong (hard) and/or weak (soft) velocity-changing collisions statistically dependent on (correlated with) or independent of dephasing (pressure-broadening) collisions. More recently, the effects of speed-dependent broadening and shifting have been evident in accurately measured Dicke-narrowed line shapes analyzed in the limits of uncorrelated soft [b c d] or hard [e f] or partially-correlated hard [g] collision models. Combined soft and hard collision speed-dependent profiles have also been proposed in the uncorrelated and fully correlated limits, [h i] which we herein generalize for partial correlations applied to the case of Ar-broadened HF.

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