AU IdBarkach, T Mahajan, T Chabot, M Beroff, K Aguirre, NF Diaz-Tendero, S Launoy, T Le Padellec, A Perrot, L Bonnin, MA Le, KC Geslin, F de Sereville, N Hammache, F Jallat, A Meyer, A Charon, E Pino, T Hamelin, T Wakelam, V
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TI Semiempirical breakdown curves of $C_2N^{(+)}$ and $C_3N^{(+)}$ molecules ; application to products branching ratios predictions of physical and processes involving these adducts
SO MOLECULAR ASTROPHYSICS
LA English
DT Article
DE Carbon and nitrogen-based molecules; Dissociation branching ratios ; Breakdown curves; Astrochemistry; KIDA database; Cold cores
AB We constructed semiempirical breakdown curves (BDC) for C_2N, C_3N, C_2N^+ and C_3N^+ molecules. These BDC, which are energy dependent dissociation branching ratios (BR) curves, were used to predict products branching ratios for various processes leading to the formation of $C_2N^{(+)}$ and $C_3N^{(+)}$ excited adducts. These processes, of astrochemical interest, are neutral-neutral and ion-molecule reactions, dissociative recombination and charge transfer reactions with He+. Model predictions of BR are compared to the literature data and to reported values in the kinetic database for astrochemistry KIDA. With the new BR values, the CnN abundances in cold cores were simulated.
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