CALCULATION OF PATH-LENGTH DISTRIBUTION FOR GALACTIC COSMIC RAYS USI

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The distribution of cosmic rays on matter thickness traversed in the interstellar gas is investigated. The equation for path-length distribution function is presented in a form of stochastic differential equation solved starting from an observer location. Cosmic ray propagation in a galactic diffusion model is considered. The realistic spatial distribution of cosmic ray sources and interstellar gas density are taken into account in our calculations. The obtained path-length distribution is close to the exponential one. This justifies the feasibility of the leaky box approximation for studies of interstellar transport and nuclear fragmentation of energetic stable nuclei. The clumpiness of interstellar gas in giant molecular clouds leads to the deviation of the distribution function from exponent at small path lengths.