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WHAT ARE THE IMPLICATIONS OF A DYNAMIC SPIRAL-ARMED PARTICLES PROPAGATION MODEL ON VARIOUS ASPECTS OF COSMIC RAYS?

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Over the years, significant effort has been devoted to understanding cosmic ray propagation in the galaxy, based on the energy dependence of the secondary to primary ratios in galactic cosmic rays. We develop a fully three dimensional numerical code describing the diffusion of cosmic rays in the Milky Way. This code enables us to explore a model in which a large fraction of the cosmic ray acceleration takes place in the vicinity of galactic spiral arms and with these spiral arms being dynamic: particle density distributions become dependent on the energy, spectral indices of CRs become “harder” on one side of the spiral arm and “softer” on the other side. Secondary to primary particle ratios and the effect on the K-capture isotopes are reported.

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