

ON COSMIC RAYS FROM THE INNER SOLAR CIRCLE

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If cosmic rays reaching the solar system diffuse in a volume with scale height of a few kiloparsecs, the cosmic ray sources in the inner solar circle contribute to the bulk of cosmic rays observed at Earth. The radial gradient of the abundance of Wolf Rayet stars in the Galaxy is locally steeper than the gradient of the abundance of stars contributing to the heavy isotopes abundance in the ISM. If this observed increase of Wolf Rayet stars is present in the inner Galaxy this may contribute to the neon isotopic anomaly in cosmic rays.

The overabundance of some key isotopes in cosmic rays thus provides constraints on the radial gradients of cosmic ray sources in the Galaxy.

We will present calculations of the abundances of cosmic rays in a galactic model with cylindrical symmetry and with diffusive confinement. At intermediate and low energies differences between calculated key secondary and primary elements and isotopes abundances in this model and those in the homogeneous model (leaky box) will be discussed and compared to the available data.

Constraints on cosmic ray source gradients in the Galaxy will be discussed.