

# Interstellar cosmic-ray spectra (1) just outside the heliosphere and (2) in the local medium: are they the same?

*Monday 19 July 2021 19:18 (12 minutes)*

Interstellar cosmic ray (CR) spectra just outside the heliosphere are accessible thanks to direct measurements of CR, with uncertainties given by the solar modulation. Interstellar CR spectra in the local medium (i.e. within  $\sim 1$  kpc around the Sun) are indirectly accessible thanks to observations of interstellar emissions in radio/microwaves and in gamma rays produced by CR interactions with the interstellar medium and the Galactic magnetic field. Observations of these interstellar emissions are an invaluable tool for understanding densities and spectra of CR in different places of our Galaxy. The derivation of both spectra depend on model assumptions.

Until very recently it was believed that CR as directly measured were resembling CR throughout the Galaxy, after accounting for solar modulation and propagation effects. However, present precise data and sophisticated modeling are posing significant challenges. If interstellar CR spectra just outside the heliosphere and in the local medium are the same is a question that has recently opened again.

We present here our effort in answering this question and our recent results.

## Keywords

## Collaboration

## other Collaboration

## Subcategory

Theoretical Methods

**Primary author:** ORLANDO, Elena

**Presenter:** ORLANDO, Elena

**Session Classification:** Discussion

**Track Classification:** Scientific Field: CRD | Cosmic Ray Direct