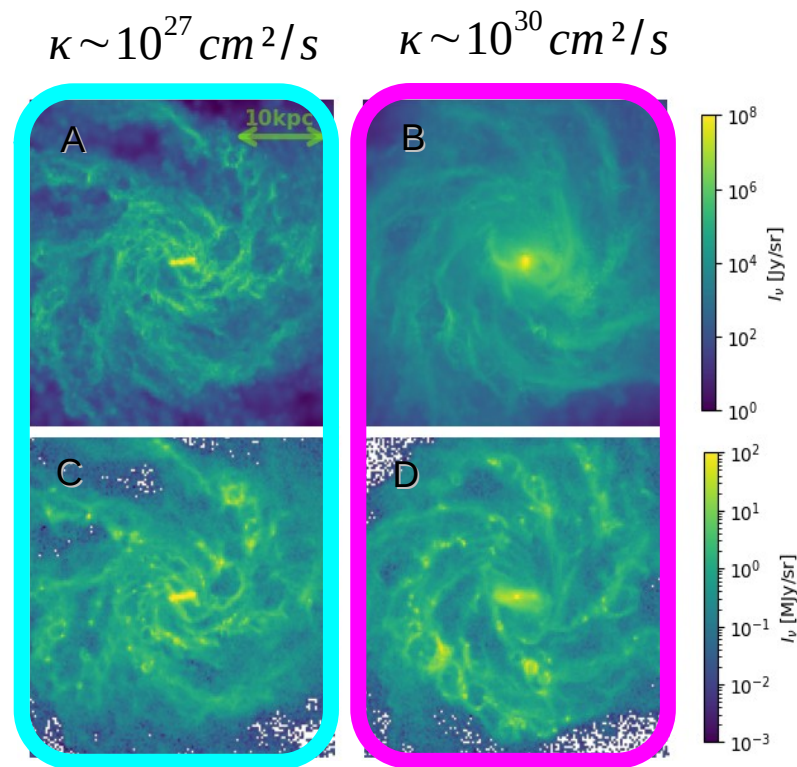


# A new method for observationally constraining cosmic ray diffusion in nearby galaxies

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**Figure 1:** Synthetic observations in radio 21cm (panels A,B) and IR at 500μm (panels B,C) for low (A,C) and high (B,D) diffusion coefficient.

The effect of the cosmic rays in galaxies depend on their diffusion in the ISM, quantified by a diffusion coefficient ( $\kappa$ ).

The idea is to compare galaxy morphology in radio and IR and study,

1. Does varied cosmic rays diffusion affect the radio morphology of a galaxy?
2. How can we quantify morphological similarity?
3. Can morphological similarity distinguish between different diffusion coefficient models?