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Astrochemistry in extreme galactic conditions

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Photodissociation Regions (PDRs) characterize the interface between the ionized and molecular gas phases. They are dominated by the presence of far-UV photons and play an important role in understanding the chemistry and the thermal balance of the interstellar medium (ISM), since it is in these regions that the atomic-to-molecular (HI-to-H2) transition occurs. I will review recent developments on understanding PDRs in the ISM of Milky Way and beyond. I will particularly focus on how the HI-to-H2 transition and the transition of carbon phases (C+/C/CO) are affected by varying the intensity of the FUV radiation field, the cosmic-ray ionization rate, and the metallicity.

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