



Jonathan Gagné

IREX, Université de Montréal

The Missing Members of Nearby Young Associations

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MSI Conference Room • 3550 University

I will present the latest developments in the search for members of young stellar associations in the Solar neighborhood, within 150 parsecs of the Sun. I will discuss the nature of these sparse and nearby associations and their utility as age-calibrating benchmarks, and present methods for identifying their members. I will detail recent efforts to identify their substellar members, some of which have model-dependent masses estimated to be as low as ~ 8 times that of Jupiter. Such low-mass objects not in orbit around a star have similar properties to non-irradiated gas giant exoplanets, and provide a unique opportunity to characterize their atmospheres at unprecedented resolutions and signal-to-noise ratios. In a second part, I will show how the recent Data Release 2 of the ESO Gaia mission is strongly impacting our understanding of the Solar neighborhood, including nearby young associations. I will talk about on-going projects to discover and characterize the low-mass stars of these young associations based on Gaia, down to the brown dwarf mass regime