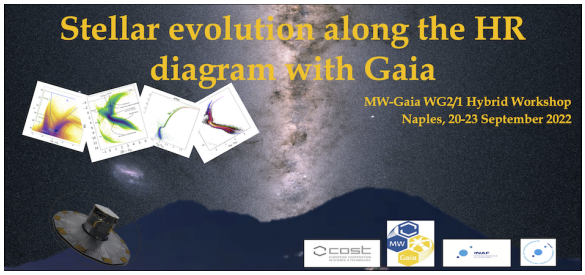

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Single star sequences of the Hyades and Pleiades open clusters

Wednesday, 21 September 2022 10:00 (20 minutes)

Based on GAIA DR3 we have identified bonafide single stars and likely binary and multiple systems in the Hyades and Pleiades open clusters. We fit fiducial isochrones in the GAIA photometric system for more than 600 single stars in the Hyades, and more than 800 single stars in the Pleiades. The fiducial isochrones serve as benchmarks for the MESA/MIST and PARSEC evolutionary models and isochrones. While PARSEC isochrone overall provide a very good fit to the observed sequences, MESA isochrones systematically under predict the observed stellar luminosity for stars with masses between 0.25 and 0.85 M_sun. The PARSEC evolutionary models enable us to assign mass, effective temperature, luminosity, and surface gravity to each of the single stars, making these some of the largest homogeneous samples of stars with slightly supersolar metallicity at ages of ~140 and 700 Myr, respectively, and masses in the range 0.1 to 3 M_sun. We compare PARSEC derived parameters assuming a fixed metallicity for each of the clusters with the parameters provided by the GAIA Astrophysical parameters interference system (APSIS) of DR3, and discuss systematic trends.

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Session Classification: Stellar evolution and pulsation models