PHYSICS AND ASTRONOMY SEMINAR

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The diversity of building up the quiescent sequence at redshift z~1

How and why galaxies grow in stellar mass and cease their star formation are key open questions of galaxy formation and evolution. I present evidence for a diversity of pathways for building up the quiescent galaxy population at early cosmic times. Specifically, I will present observational constraints on star-formation histories and quenching timescales by combining Keck DEIMOS spectroscopic data with >10-band photometry. I will discuss how one can self-consistently fit both photometric and spectroscopic data together with the tool Prospector, which allows fitting for non-parametric star-formation histories and complex stellar, nebular, and dust physics. Despite the apparent diversity, we find that the most massive, compact galaxies have formed their stars the earliest and most rapidly. Furthermore, from the star-formation history constraints, I will discuss how galaxies evolve about scaling relations (such as the star-forming main sequence) with cosmic time. Finally, I will relate these findings to numerical simulations (in particular IllustrisTNG), showing that the large diversity of quenching epochs and timescales challenge numerical models and point toward a combination of internal and external quenching mechanisms.

Wednesday, July 21, 2021

3:00 p.m. PST

For more information: https://www.sfu.ca/~jwa304/seminars.shtml