COLLOQUIUM

What Can We Learn from Starlight in Galaxies?

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Stars in galaxies like the Milky Way are much more concentrated to the central regions than is the dark matter, reflecting how galaxies were formed, how galaxies interacted with their environment, and how galaxies have otherwise evolved. Given an understanding of how individual stars evolve with time, we can decode a galaxy's-worth of starlight to estimate the distribution of stellar ages within it. Besides light, other byproducts of stellar evolution include ejected gas that is enriched in heavy elements, and dark end-states that lock up material from being included in later generations. The talk will illustrate how wide-field surveys such as the Sloan Digital Sky Survey and the Dark Energy Survey contribute to this field. The understanding of how mass (as opposed to light) is distributed within galaxies emerged over a period of time and some of this history will also be presented.