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Stellar Astrophysics: 100 Years after Russell

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Since the pioneering work of Henry Norris Russell 100 years ago, the study of nearby stellar populations has served as a foundation for our quest to understand the nature of galaxies. Today, studies of resolved stellar populations constrain fundamental relations -- such as the initial mass function of stars, the time scales of stellar evolution, the timing of mass loss and amount of energetic feedback, the color-magnitude relation and its dependency on age and metallicity -- that represent key ingredients in our prescription to interpret light from the Universe and to measure the physical state of galaxies. In this presentation, I'll describe new, high-precision measurements of some of the most important relations that provide this mapping between resolved and unresolved light, and discuss new opportunities for stellar population studies given an unprecedented suite of astronomical tools that are now on our horizon - GAIA, JWST, LSST, WFIRST, 30-meter telescopes.