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Precise stellar ages for Galactic archaeology through machine learning (poster pitch)

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Age is arguably the stellar fundamental parameters that is most difficult to obtain for most stars. Over the last few years, many studies have found empirical relationships between the abundance of a star and its isochrone age, known as chemical clocks. We present a new catalogue of spectroscopic stellar ages for 180,000 red-giant stars observed by the APOGEE survey with a median statistical uncertainty of 16%, obtained using the supervised machine learning technique XGBoost, trained on a high-quality dataset of 3200 stars with asteroseismic ages from Kepler. These age estimates are then used to present new and much less spatially biased measurements of the Galactic radial metallicity gradient as a function of age, and the age-velocity dispersion relation over a large portion of the Galactic disc.

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