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Spectral Classification of Gaia White Dwarfs within 500 pc using a Random Forest Algorithm (poster pitch)

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The third Gaia data release has provided low resolution BP/RP spectra for nearly 100,000 white dwarfs, the most common stellar remnant. The sheer magnitude of this quantity of data precludes the possibility of performing spectral analysis and type determination by human inspection. However, the current development of machine learning techniques allows us to tackle this issue in a satisfactory manner. In this contribution we use a Random Forest algorithm for extracting the maximum information locked in the Gaia spectra coefficients. We aim to classify the white dwarf population into its different atmospheric spectral types; a key feature for accurately deriving stellar parameters of these stars such as their masses, temperatures or ages. Our results are first validated using a sample of white dwarfs within 100 pc from the Sun, achieving an overall accuracy of 90%. We then apply our Random Forest algorithm for spectral classification to the 500-pc white dwarf sample, which comprises over 95% of all known white dwarfs with available Gaia spectra.

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