A Web-based Plotting Tool for Education and Research of Star Clusters

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Abstract

Hertzsprung-Russell diagrams (HR diagram) are scatter plots of stellar luminosity over their intrinsic color, and patterns observed from HR diagrams illustrate important facts of stellar evolution, a key concept in astronomy. However, there lacks a way to teach stellar evolution and HR diagrams in a hands-on and interactive way in introductory astronomy courses. This research aims to create a web-based and accessible plotting tool that will allow students to plot their own observational and archival catalog data, filter out field stars with proper motion and distance, and fit an isochrone curve to it. The product, named Cluster Pro Plus, is currently under trial in multiple institutions as a part of the new curriculum: "Multi-wavelength Universe!" (MWU!) lead by Dr. Daniel Reichart and Dr. Daryl Janzen etc.