**Title** Modelling extinction and its effect on isochrone ages as functions of fundamental stellar parameters

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To determine the age of a cluster of stars, a series of stellar isochrones is fitted to the observed colour-magnitude diagram (CMD) of the cluster, with the age of the best-fitting isochrone taken as the cluster age. However, to link observations to theory, the interstellar extinction of light must first be accounted for. The standard approach at present is to assume a constant extinction value across the cluster for a given wavelength and filter.

In this project, the variations of extinction between individual stars, relative to a known reference filter extinction, *AV*, are calculated from synthetic stellar atmospheres, the known response functions for multiple broad-band filter systems, with wavelengths ranging from the ultraviolet (UV) to the infrared (IR), and empirical wavelength dependence of extinction.

These variations are then modelled empirically in each filter, using relatively simple analytic functions of stellar effective temperature, surface gravity and metallicity. The functions accurately recover the data in all filters except the two shortest-wavelength UV filters.

The functions will then be applied to a series of isochrones, together with differing values *AV* to simulate different distances to clusters. A constant extinction value for each filter will also be applied to the isochrones for comparison. The difference between the results of these two methods is expected to be significant, particularly at large distances.