

A GRAVITATIONAL REDSHIFT DETERMINATION OF THE MEAN MASS OF WHITE DWARFS

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We measure apparent velocities (v_{app}) of the H α and H β Balmer line cores for white dwarfs (WDs) using optical spectra taken for the European Southern Observatory SN Ia Progenitor survey (SPY). Assuming these WDs are nearby and comoving, we correct our velocities to the local standard of rest so that the remaining stellar motions are random. By averaging over the sample, we are left with the mean gravitational redshift, and using the mass-radius relation from evolutionary models, this translates to a mean mass. We investigate a sample of 449 non-binary thin disk normal DA WDs and find a mean mass that is significantly higher than all previous spectroscopic determinations *except* the recent findings of Tremblay & Bergeron. Since the gravitational redshift method is independent of surface gravity from atmosphere models, we investigate the mean mass of DAs with spectroscopic T_{eff} both above and below 12,000 K. Our results are consistent with *no* significant change in mean mass. We also investigate a sample of 20 DBA WDs and derive a mean mass higher than that of DAs.