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# KIC 7582608: A new Kepler roAp star with frequency variability

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## Abstract

We present the analysis the fifth roAp star reported in the Kepler field, KIC 7582608 discovered with the SuperWASP project. The object shows a high frequency pulsation at 181.7324 c/d with an amplitude of 1.45 millimagnitudes, and low frequency rotational modulation corresponding to a period of 20.4339 d. Spectral analysis confirms the Ap nature of the target, with the characteristic lines of Eu II, Nd III and Pr III present. The spectra are not greatly affected by broadening, which is consistent with long rotational period found from photometry. We derive an effective temperature of 8700 K from our spectral observations and derive a lower limit on the mean magnetic field modulus of  $3.05 \pm 0.23$ . Long Cadence Kepler observations show a quintuplet split by the rotational period of the star. We detect frequency variations of the pulsational signature in both the WASP and Kepler data sets, which suggest either internal changes in the pulsation cavity or external interactions such as a binary companion.

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