

RADIO EMISSION FROM EA ECLIPSING BINARIES: EVIDENCE FOR KILOGAUSS
EARLY- AND LATE-TYPE STARS

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(Not reviewed)

A recent survey of EA eclipsing binaries by the Parkes 64-m telescope operating at 8.4 GHz detected 15 out of 47 systems on at least one out of the 10 nights surveyed. The detected systems were HD 6882 (ξ Phe), HD 36486 (δ Ori A), HD 39780 (TZ Men), HD 57167 (R CMa), HD 58713 (RY Gem), HD 74307 (S Cnc), HD 132742 (δ Lib), HD 147683 (V769 Sco), HD 161741 (V393 Sco), HD 163708 (V1647 Sgr), HD 168710 (XZ Sgr), HD 183794 (V822 Aql), HD 187949 (V505 Sgr), HD 199005 (KZ Pav), and HD 207098 (δ Cap).

A full account of the observations and interpretation has been submitted to *The Astrophysical Journal*.

About one-half of the 15 detections refer to main-sequence pairs of spectral types earlier than F and the remainder are classical Algols.

The radio emission is most likely gyro-synchrotron radiation from mildly relativistic electrons ($E \leq 1$ MeV) trapped in magnetic fields between the two components of the eclipsing system. The estimated mean coronal magnetic field is $B = 150$ to 300 G, implying surface magnetic fields $B_0 \approx 6 \times 10^2$ to 2×10^4 G. To our knowledge this is the first compelling evidence for strong surface magnetic fields on early-type stars other than the chemically peculiar Ap and Bp varieties. Such strong fields also have important ramifications for mass loss between stars in Algol systems.

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