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DEPARTMENT OF PHYSICS AND ASTRONOMY

The nature of the magnetic white dwarf + probable brown dwarf binary SDSS J121209.31+013627.7

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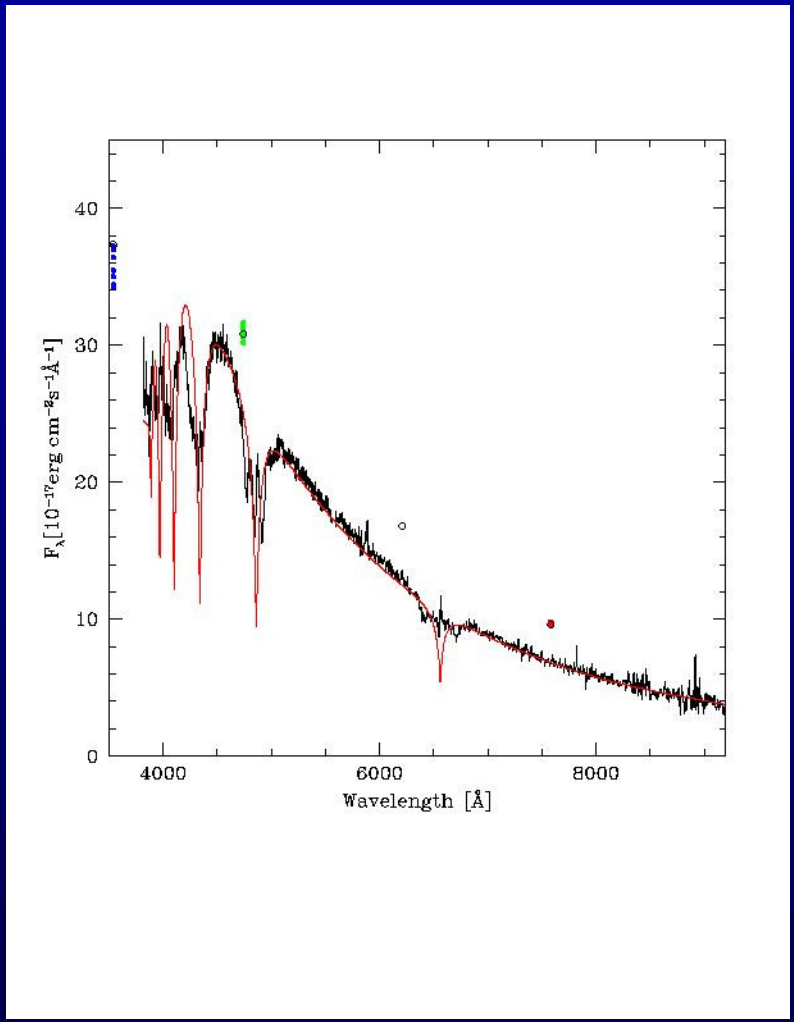
Close white dwarf + brown dwarf binaries

- Rare: only two WD+BD binaries known
  - Both wide systems
- Many CVs suspected to contain BDs
  - Secondaries difficult to certify (cyclotron emission in IR)
  - eg magnetic CV EF Eri

SDSS J121209.31+013627.7



- Discovered by Schmidt et al. 2005, ApJ, 630, L173
- Magnetic WD (B=13MG, T=10,000K) + probable BD
- Narrow Halpha emission line from irradiated secondary, gives P~90mins
- No evidence for RLOF
- No direct detection of secondary: limit L5
- Detached pre-Polar or something else?

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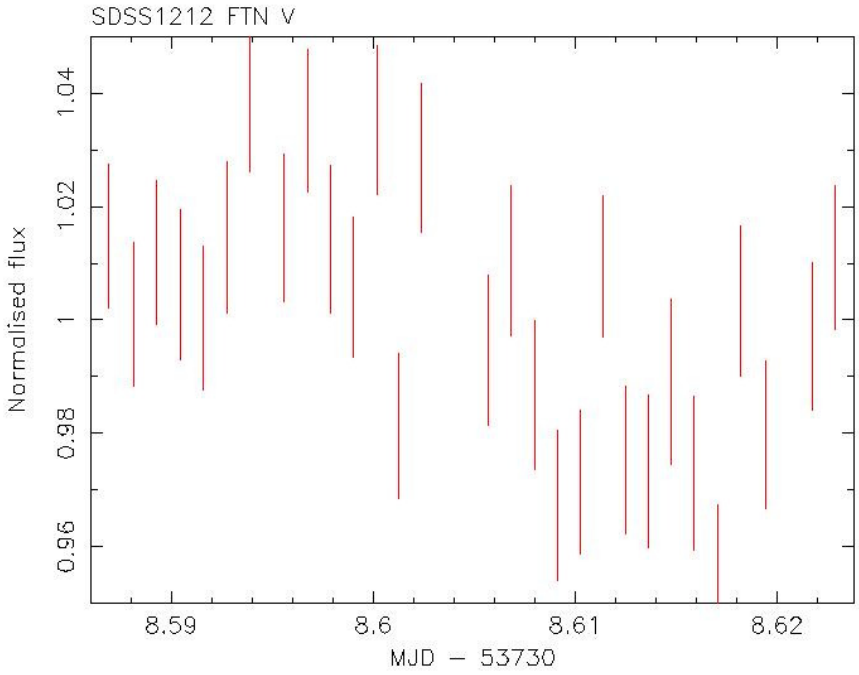
Faulkes Telescope V-band Photometry



- Obtained in January ’06 by Oundle School in a project with Leicester
- Aim: search for photometric variability & eclipses, constrain period
- Period consistent with 90min RV

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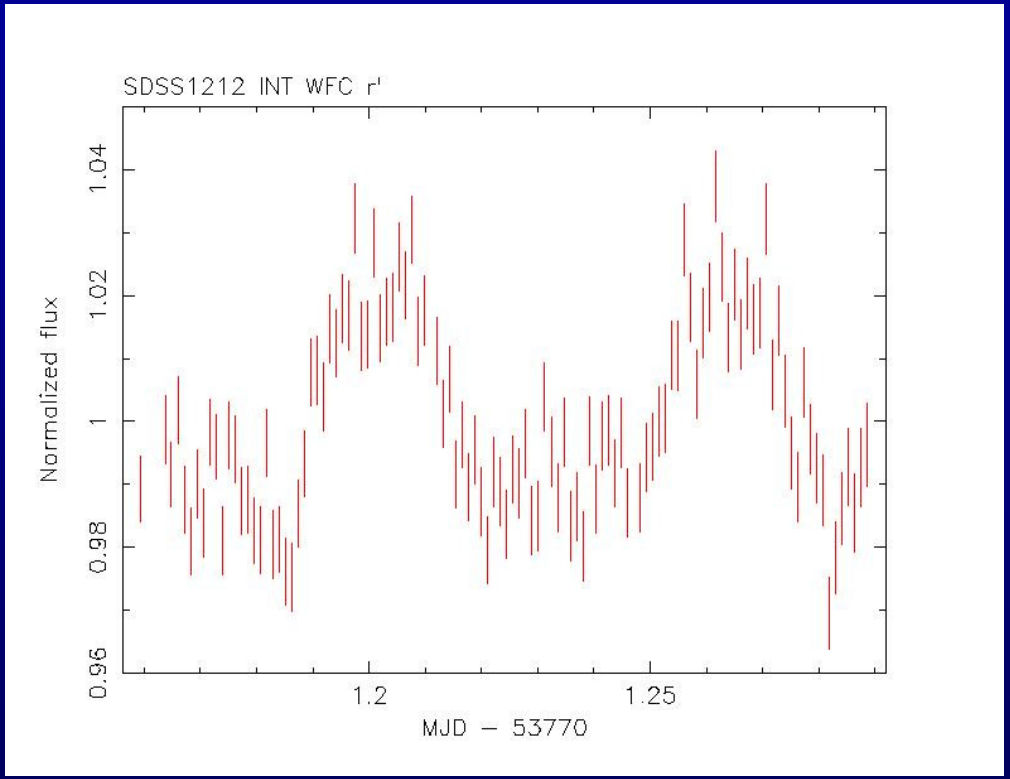
INT r' band light curve



- 3 hours of data obtained in Feb with the INT WFC
- No eclipses or non-radial pulsations

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