

Multiwavelength observations
of the active M dwarf CN Leo

Magnetic field variations and a giant flare

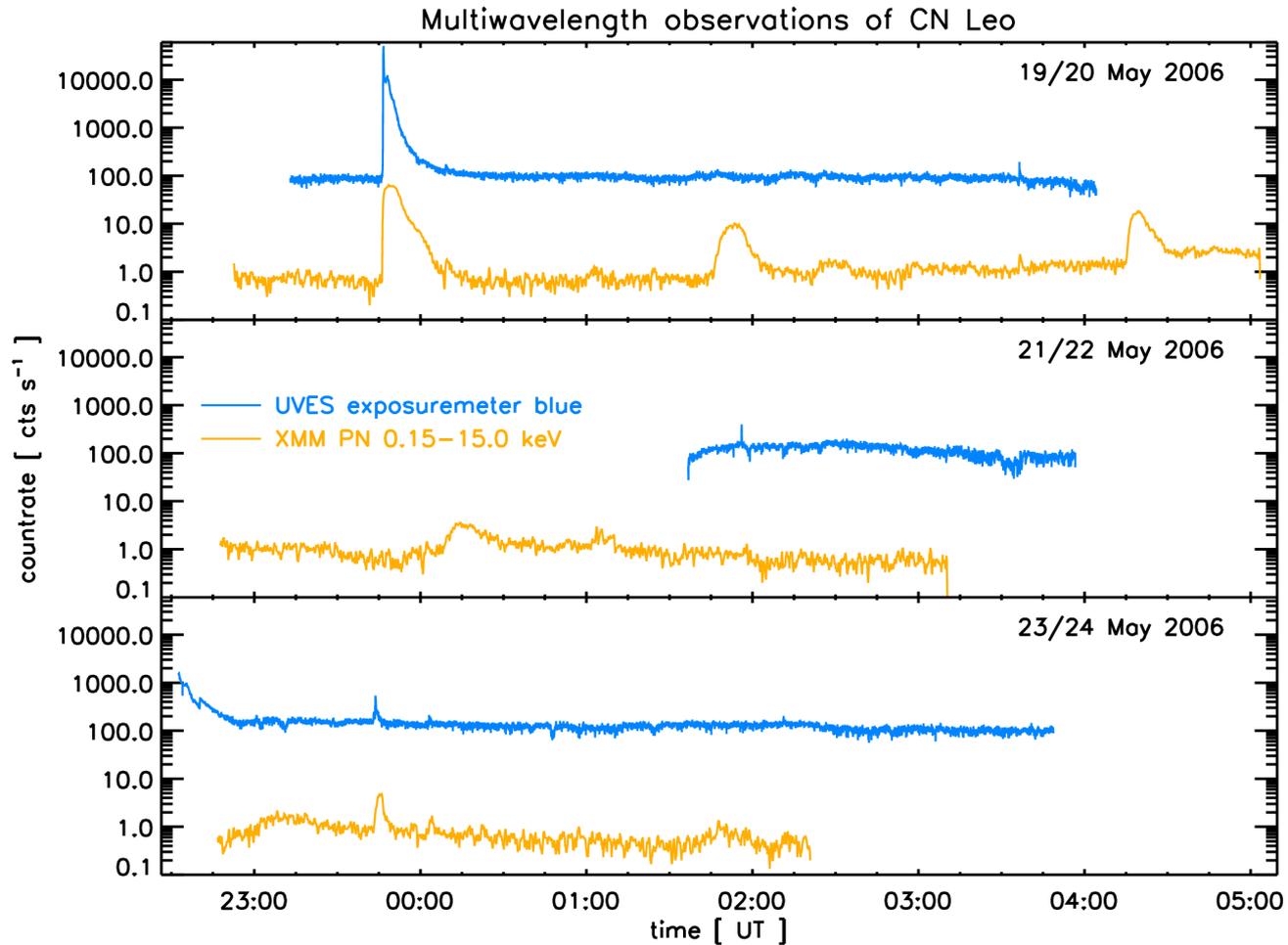
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The observations



The giant flare

Many interesting things:

- Multiband photometry
- Precursing event in the U band, short impulsive outburst in X-rays
- Coronal plasma diagnostics from EPIC data
- Density diagnostics from O VII triplet: $\log n_e > 12$ during the flare
- UVES spectra: continuum enhancement, development of chromospheric emission lines

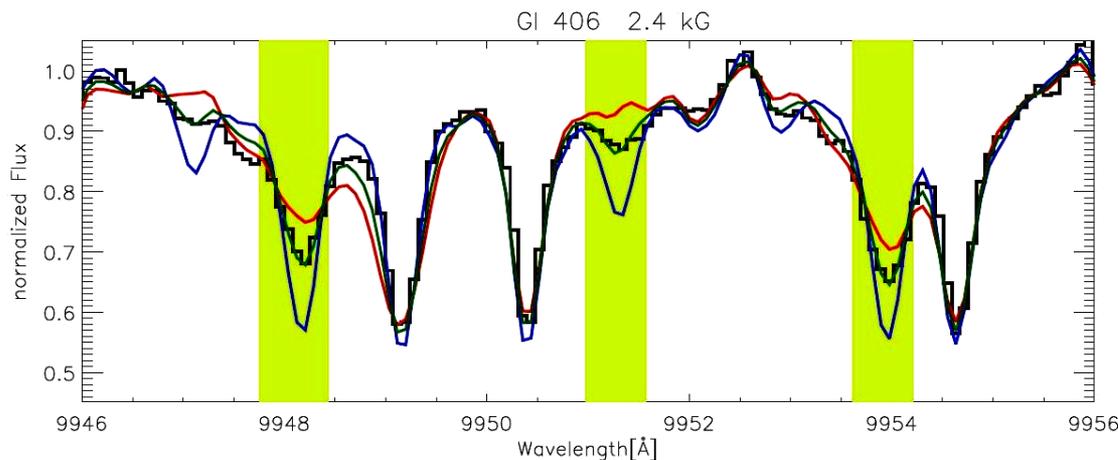
... but only a 5-minute talk \Rightarrow Poster P04

- **Magnetic fields**

Measuring magnetic fields

Follow the method introduced by Reiners & Basri, 2006

- FeH band contains magnetically sensitive and insensitive lines
- Comparison to template spectra of stars with low and high magnetic flux known from other measurements
- Consider seeing variations, rotational broadening, apply optical depth scaling to account for strengthening towards later spectral type



CN Leo Keck HIRES

EV Lac (scaled), ≈ 3.9 kG
(Johns-Krull & Valenti, 1996)

GJ 1002 (scaled), 0 kG

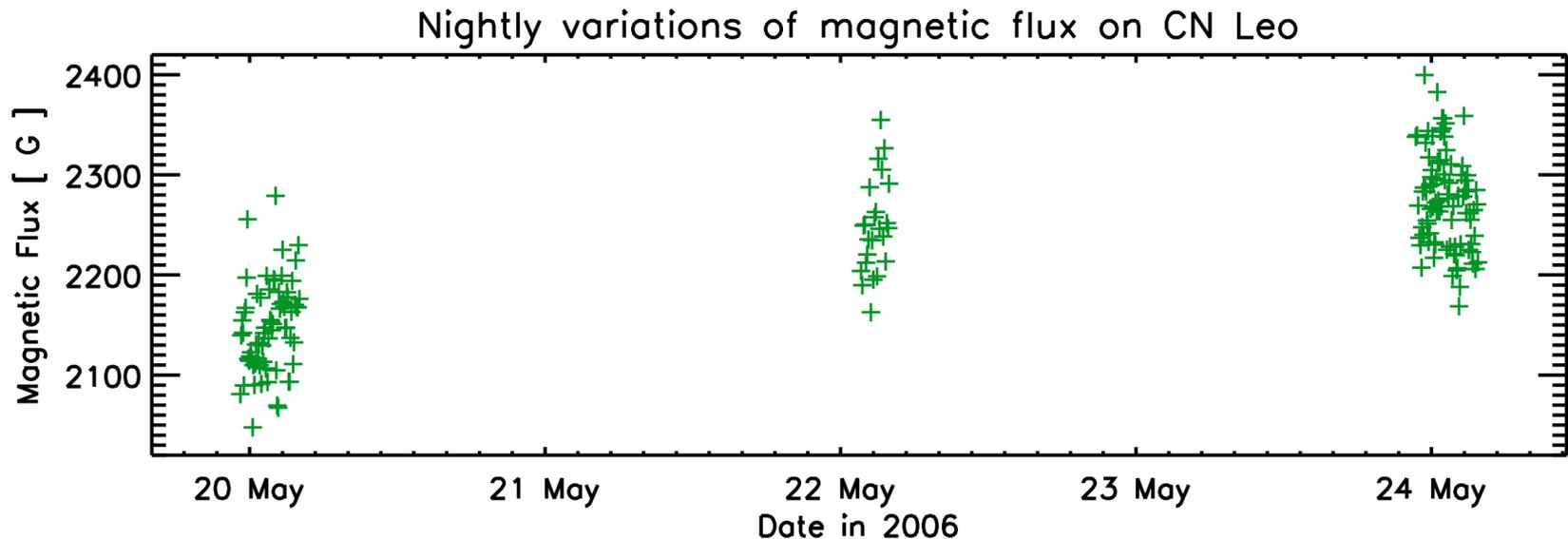
Best fit

Reiners & Basri, accepted by ApJ

- Here: Use also relative comparison of the individual CN Leo spectra

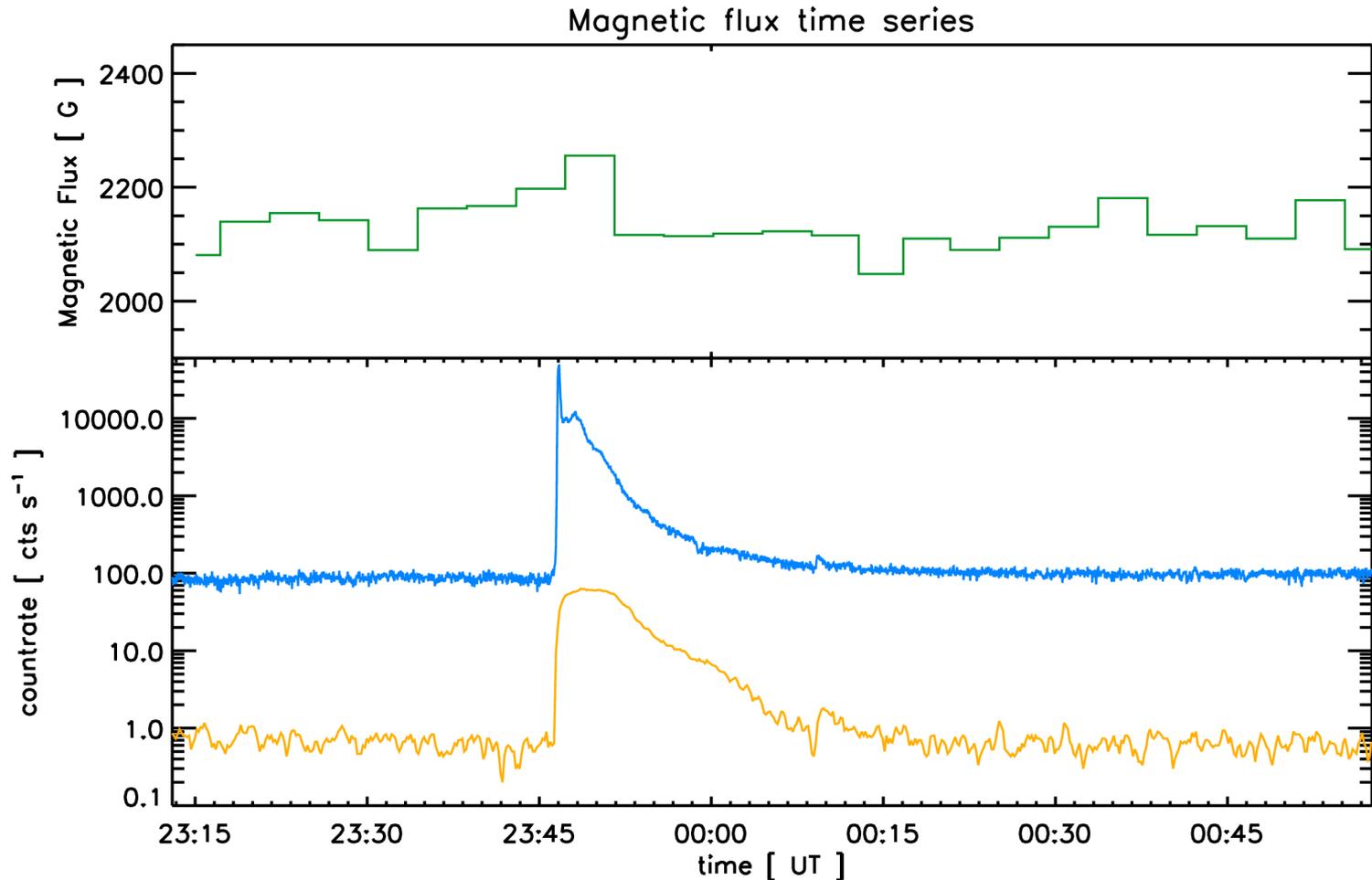
Nightly variations

- Average flux difference: 100 G from 1st to 2nd night, 25 G from 2nd to 3rd night



- Long-term variability with even higher amplitude indicated by spectra obtained earlier with VLT/UVES and Keck/HIRES

Flare-related changes?



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