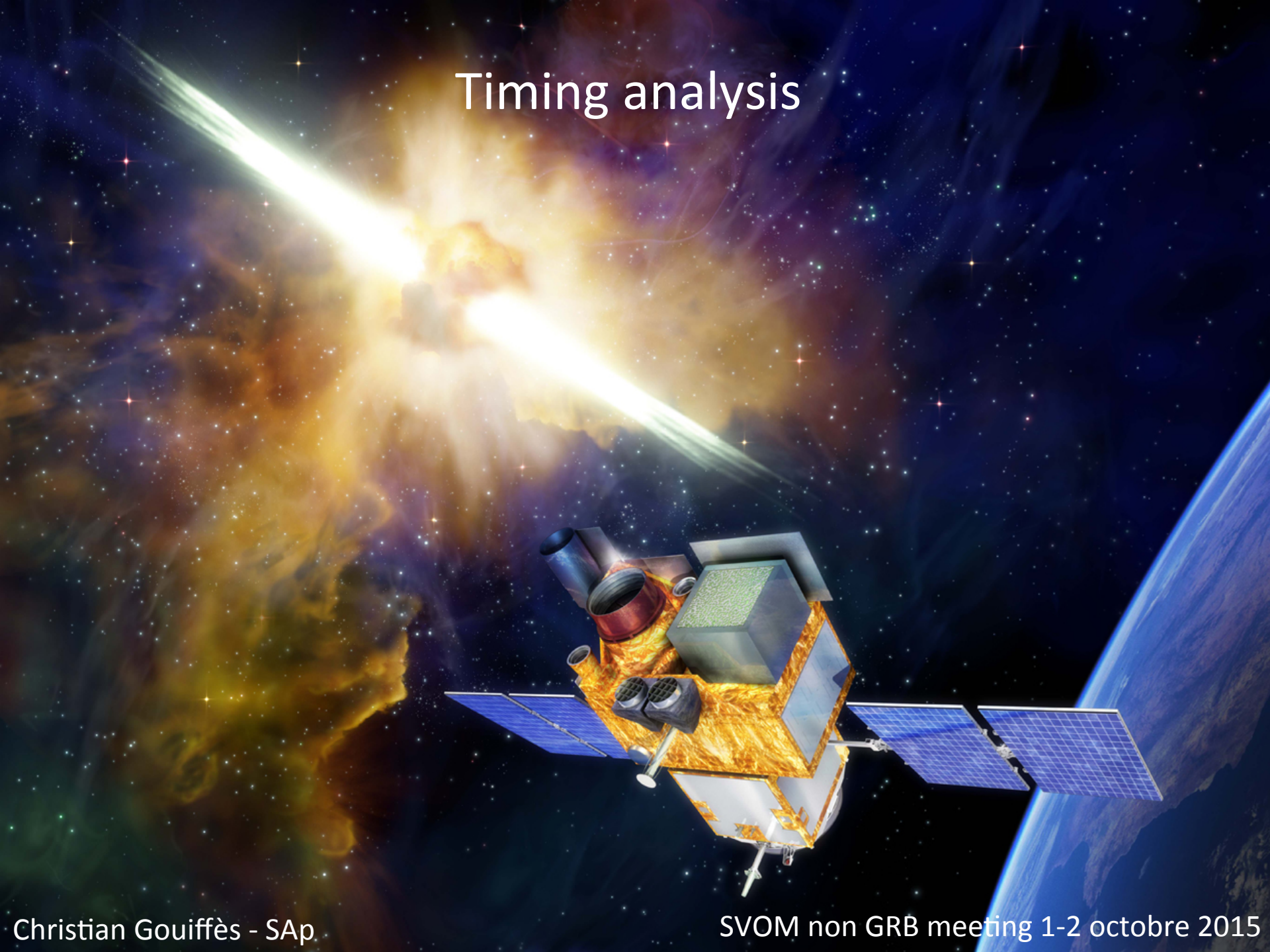
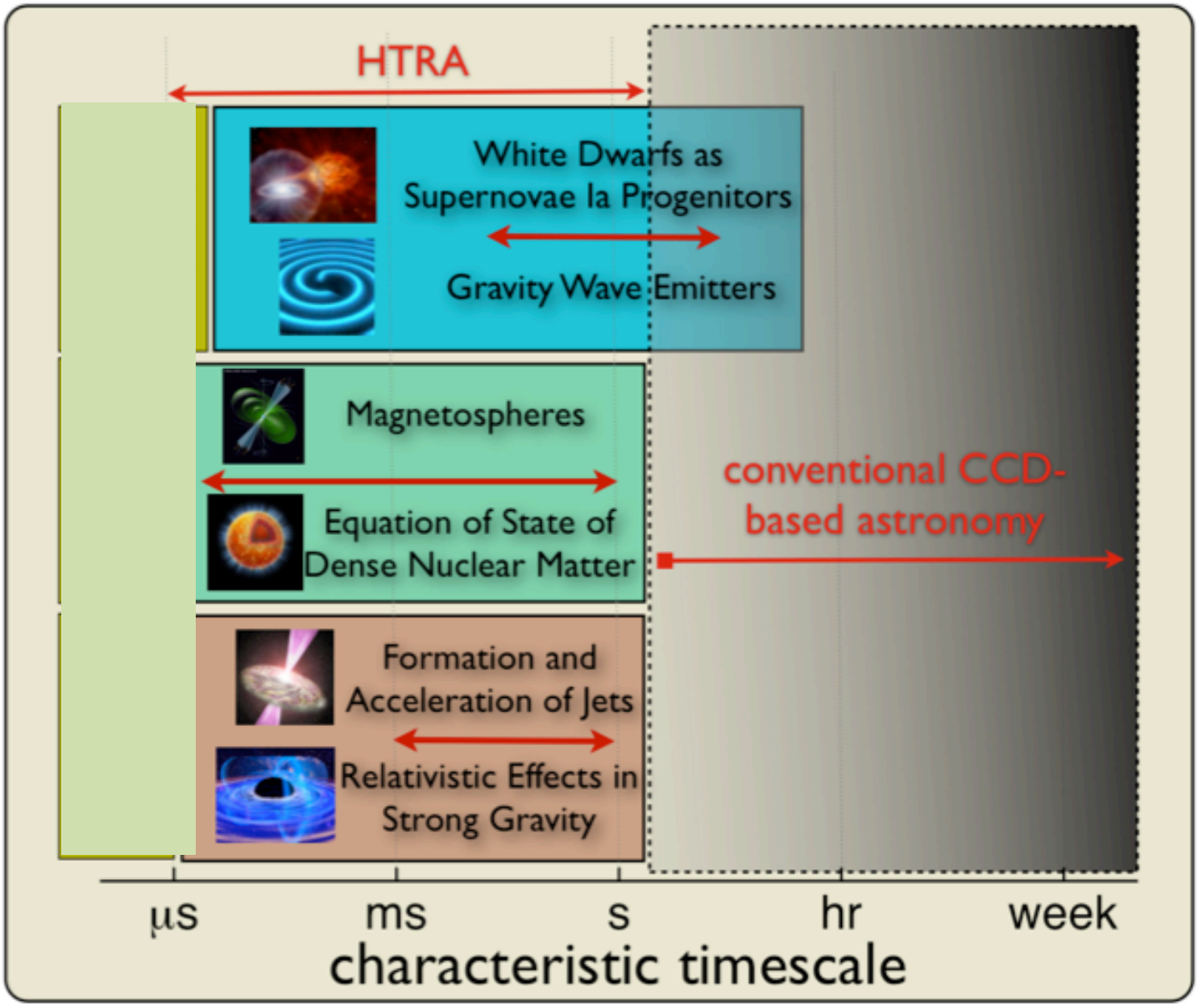
Timing analysis



Christian Gouiffès - SAp



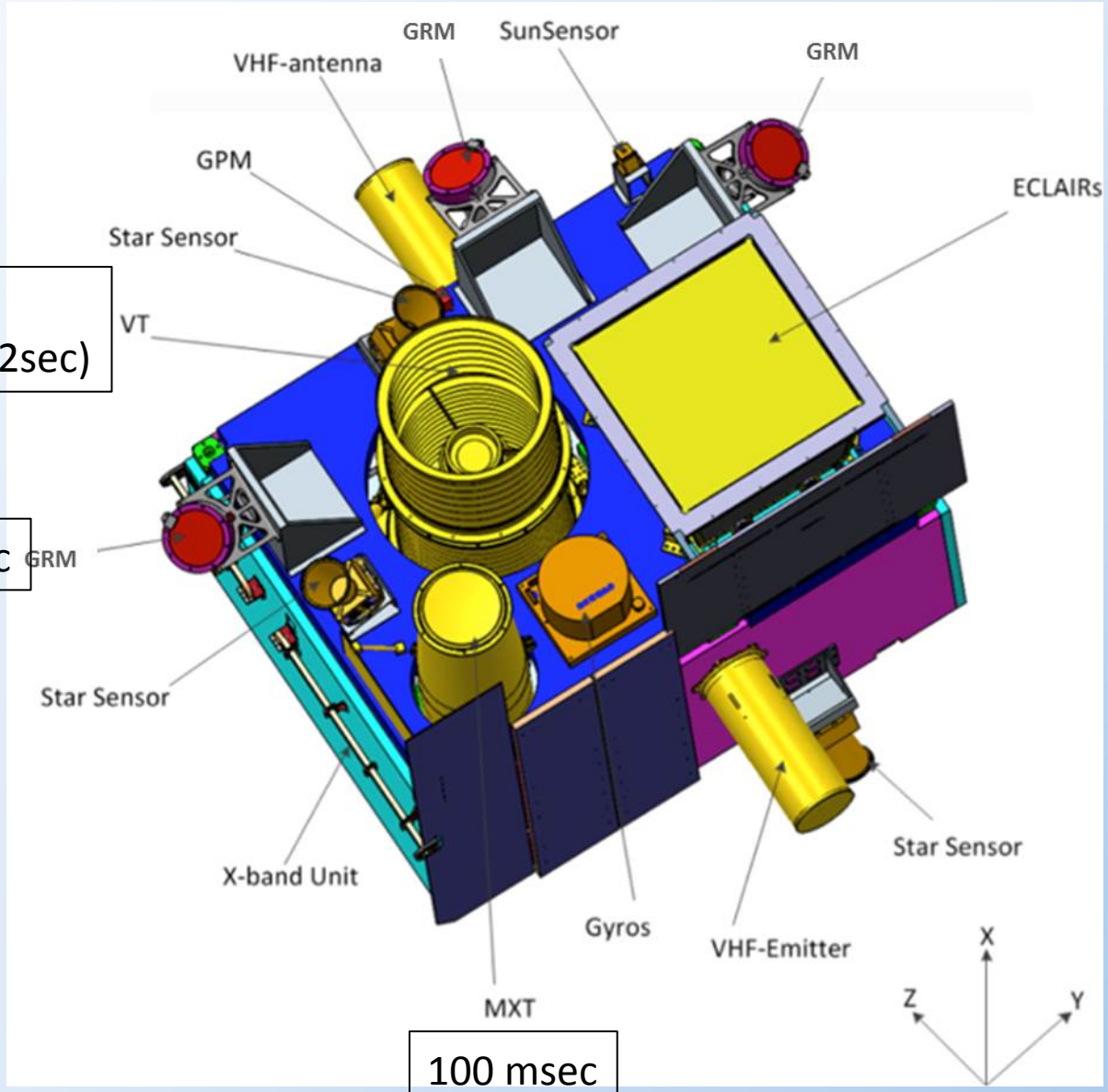
From Shearer et al, 2009

Potential sources for timing studies T<1h-1min
(see previous workshop)

- Pulsars
- magnetars
- XRBs (Be X-ray, FSXT,LMXRBs)
- ULX
- AGNs

sources with T<1sec

- Pulsars
- Magnetars
- XRBs (QPO)
- Eventually GRB
- Calibration source : Crab (timing + image + spectra) → regular observation?
  → msec required for timing

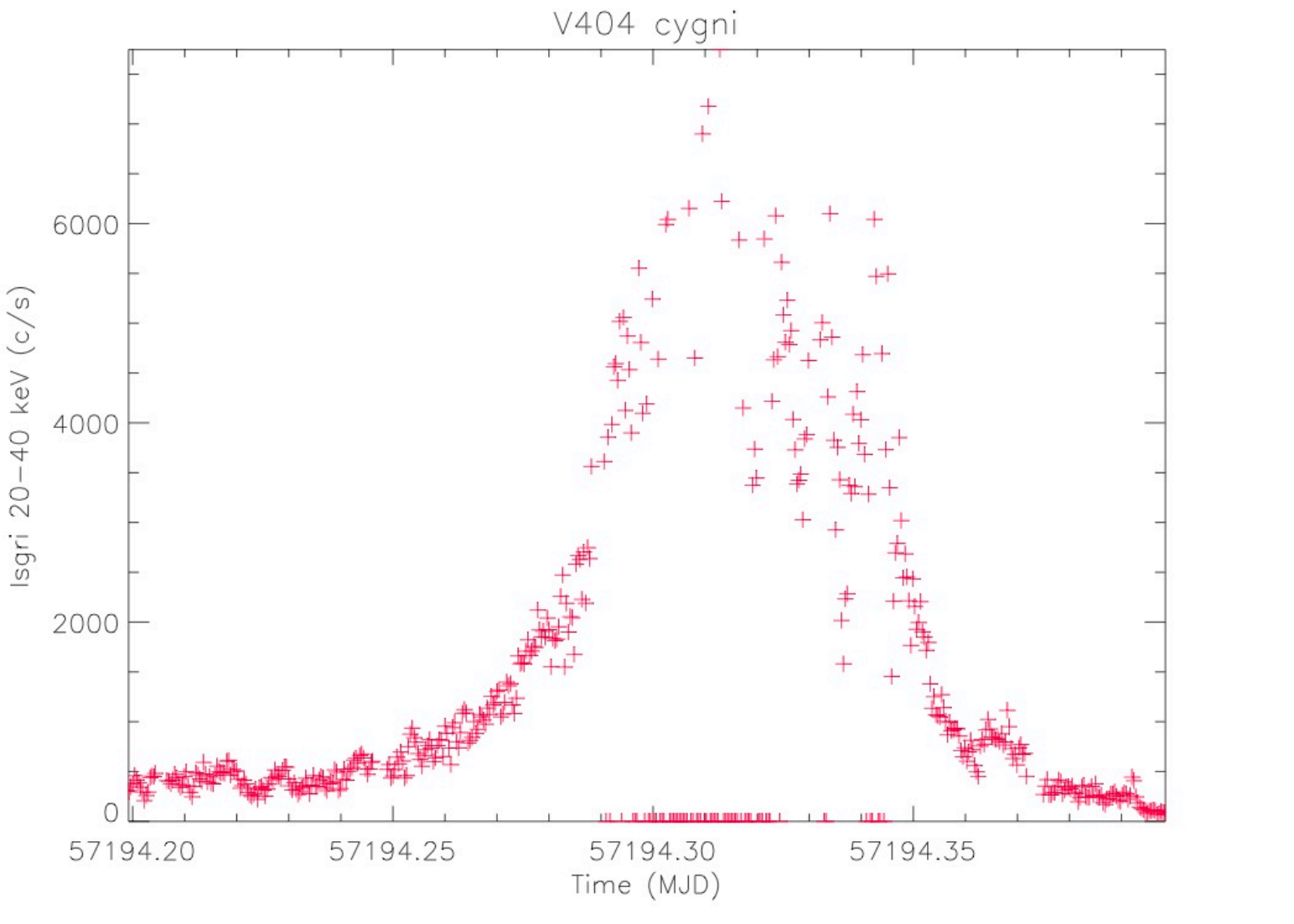


1 -100 sec
(reading time 12sec)

< 1 msec

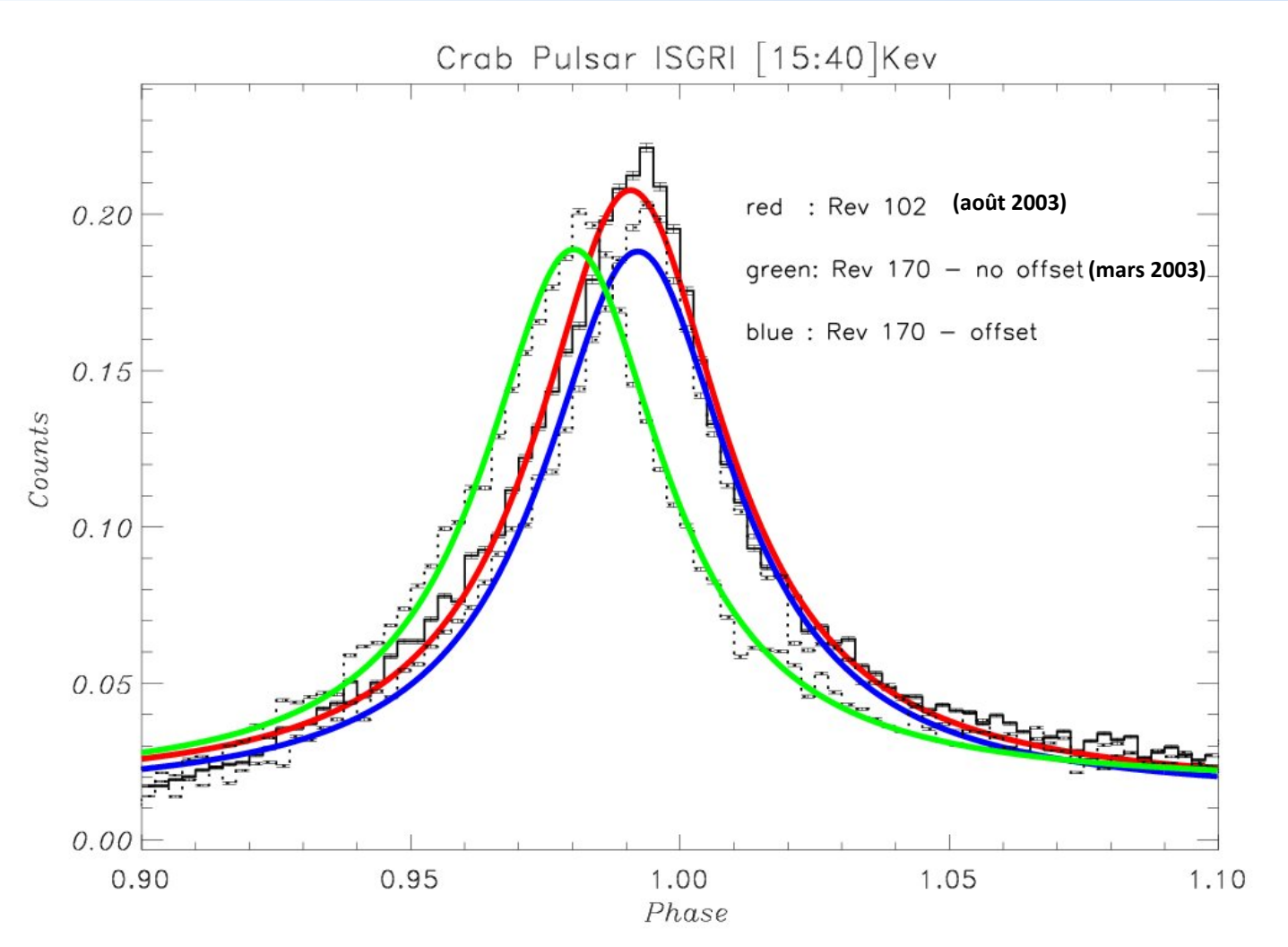
< 1 msec

100 msec



Rodriguez, Chambouleyron et al, 2015

INTEGRAL : shift in Crab pulsar lightcurve



BUT : bug in the barycentric programme
(not seen before because the – few - users in HTR use their own packages)

Conclusion and questions

- Good timing on board
- Clocks accuracy and stability
- Good knowledge of the satellite position (consolated data? discussion yesterday)
- Ground station
- Calibration source : Crab (timing + image + spectra) → regular observation?
- Special mode of observation : :event file?
- Event list (Pixel Illumination Factor PIF)
- Analysis software : HEASoft package Xronos, Hera.. Tempo2 for pulsars),
  own software ?
- ……

Some thoughts for discussion

- Is the community interested ?
- At what price ?
- Can we get T~1msec (instrument, telemetry, ..)
- What do we offer as “standard” software if any ?