

RESIK & SphinX on CORONAS spacecraft

An example of fruitful multi-institute collaborations



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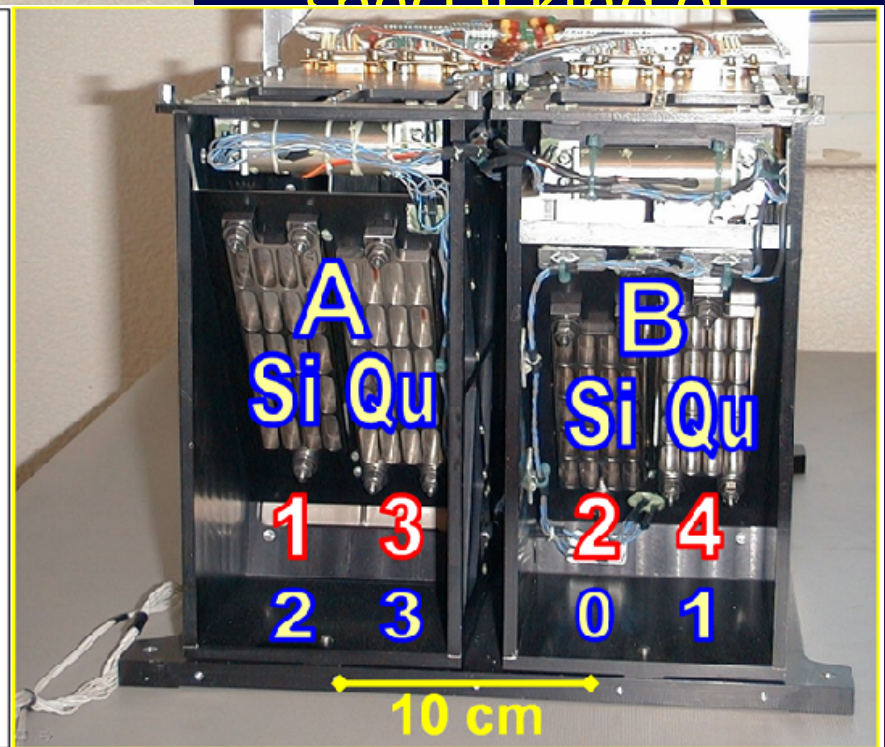
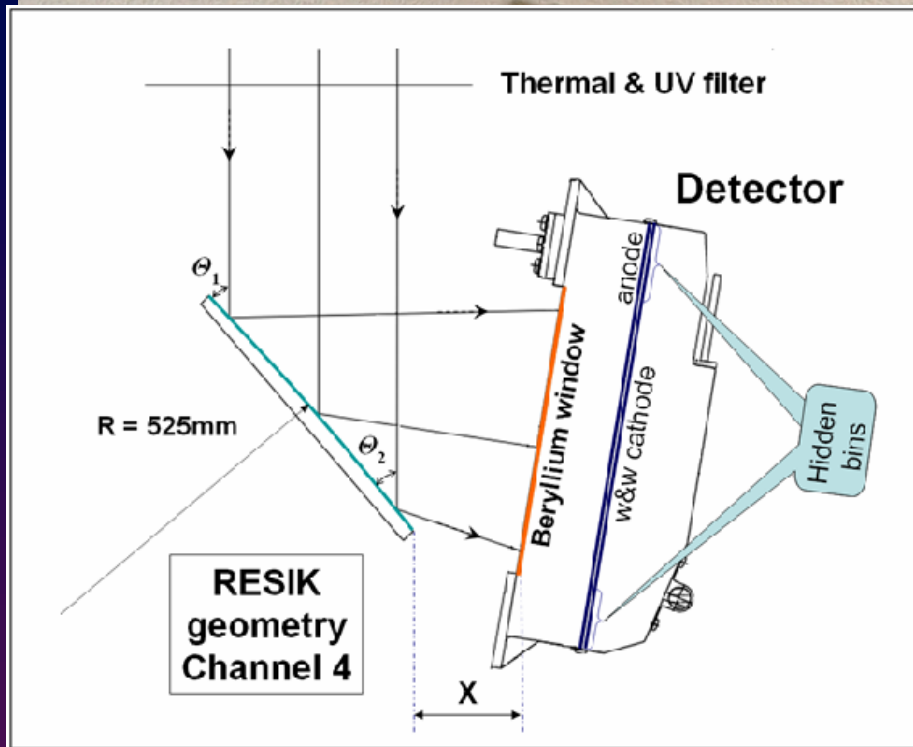
Sergey Kuzin FIAN



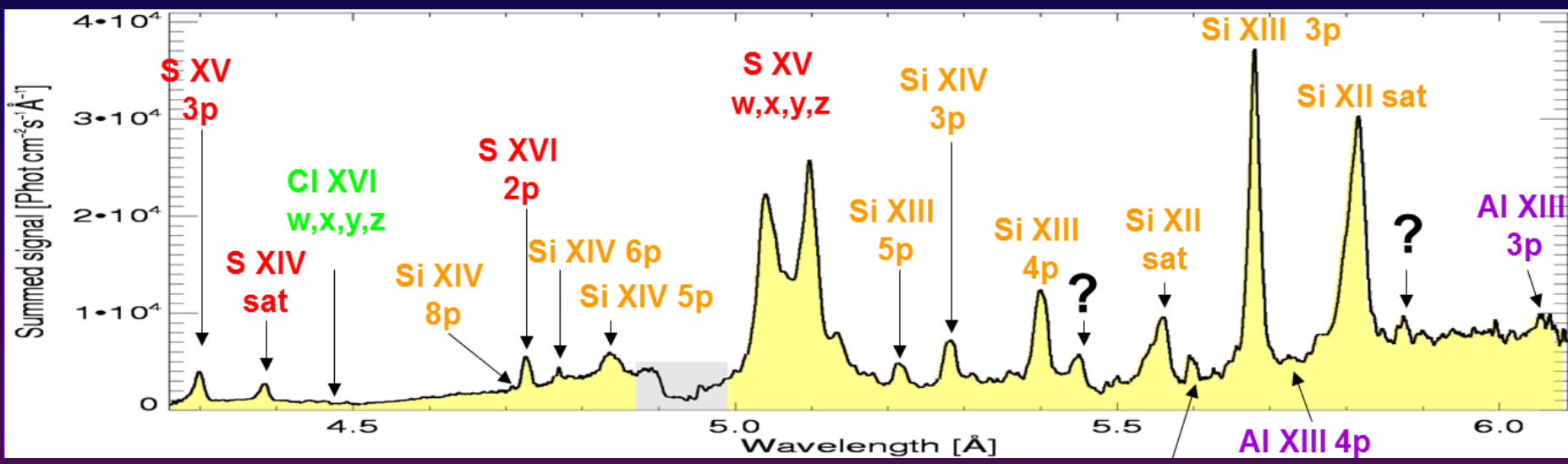
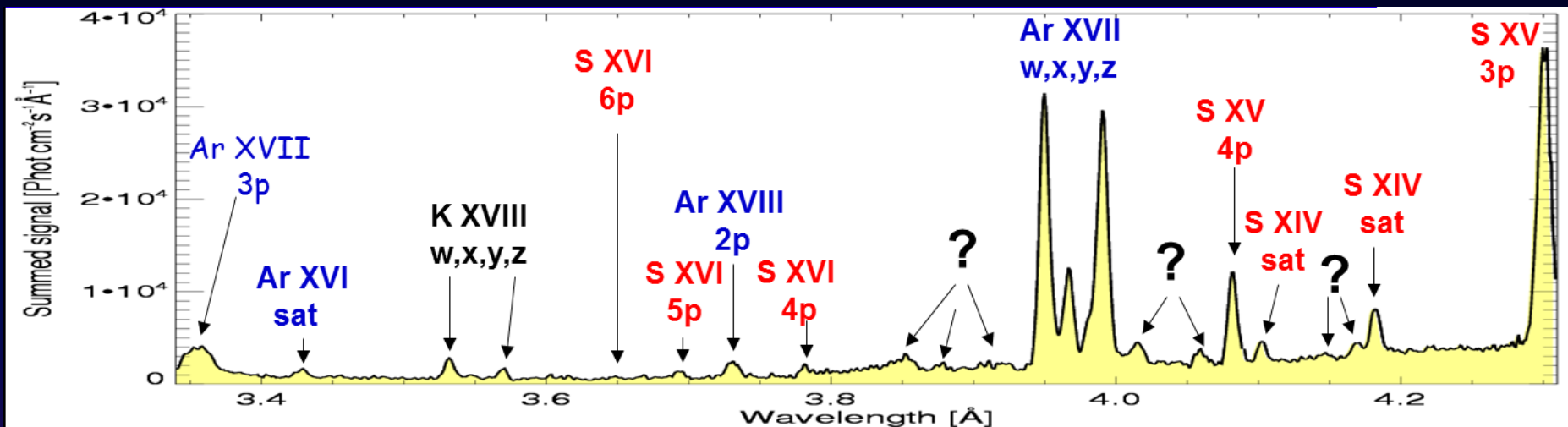
What was RESIK?



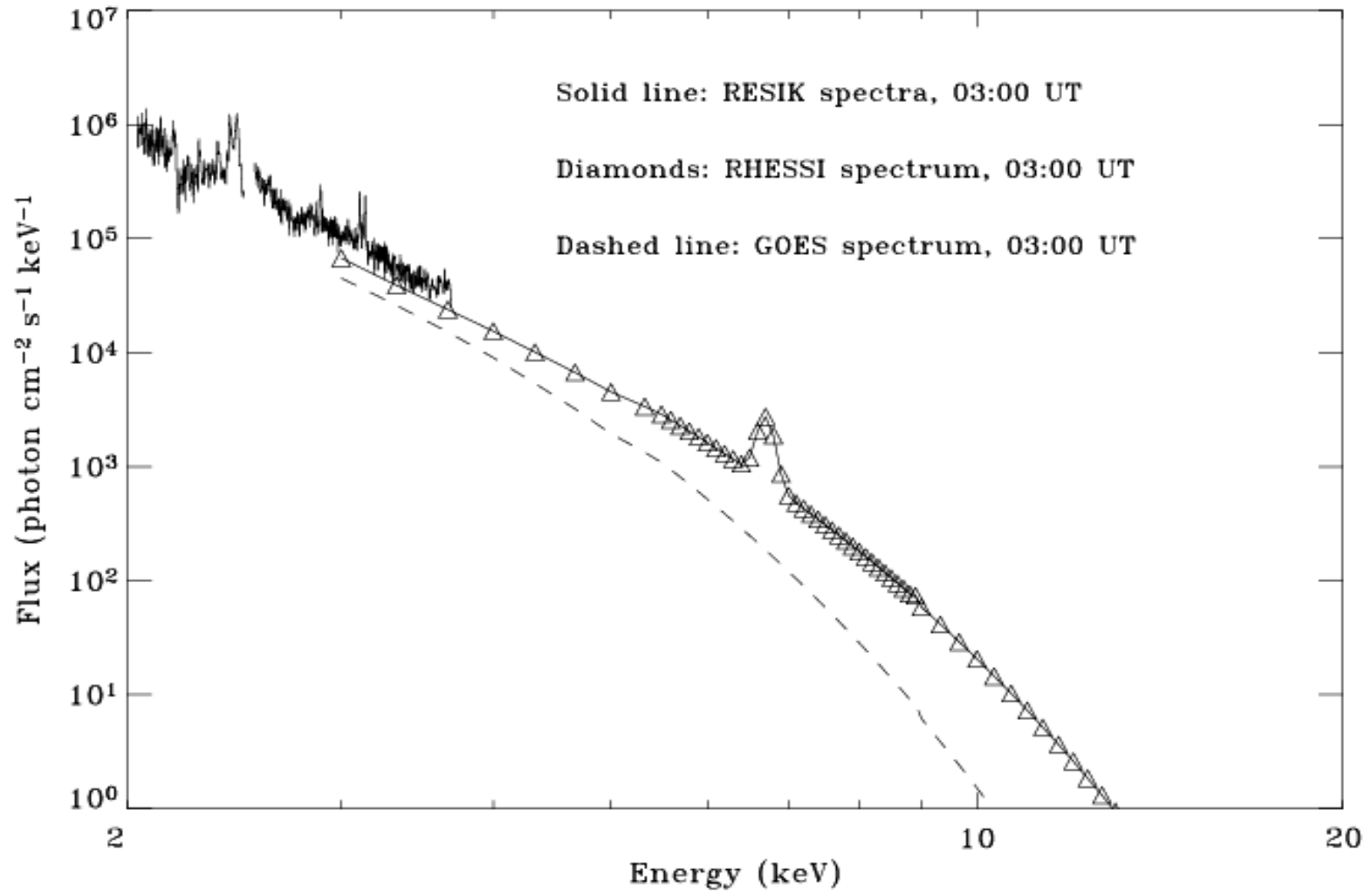
RESIK was a special kind of



RESIK observed spectra in the range 3-6 Å never observed before in such variety!

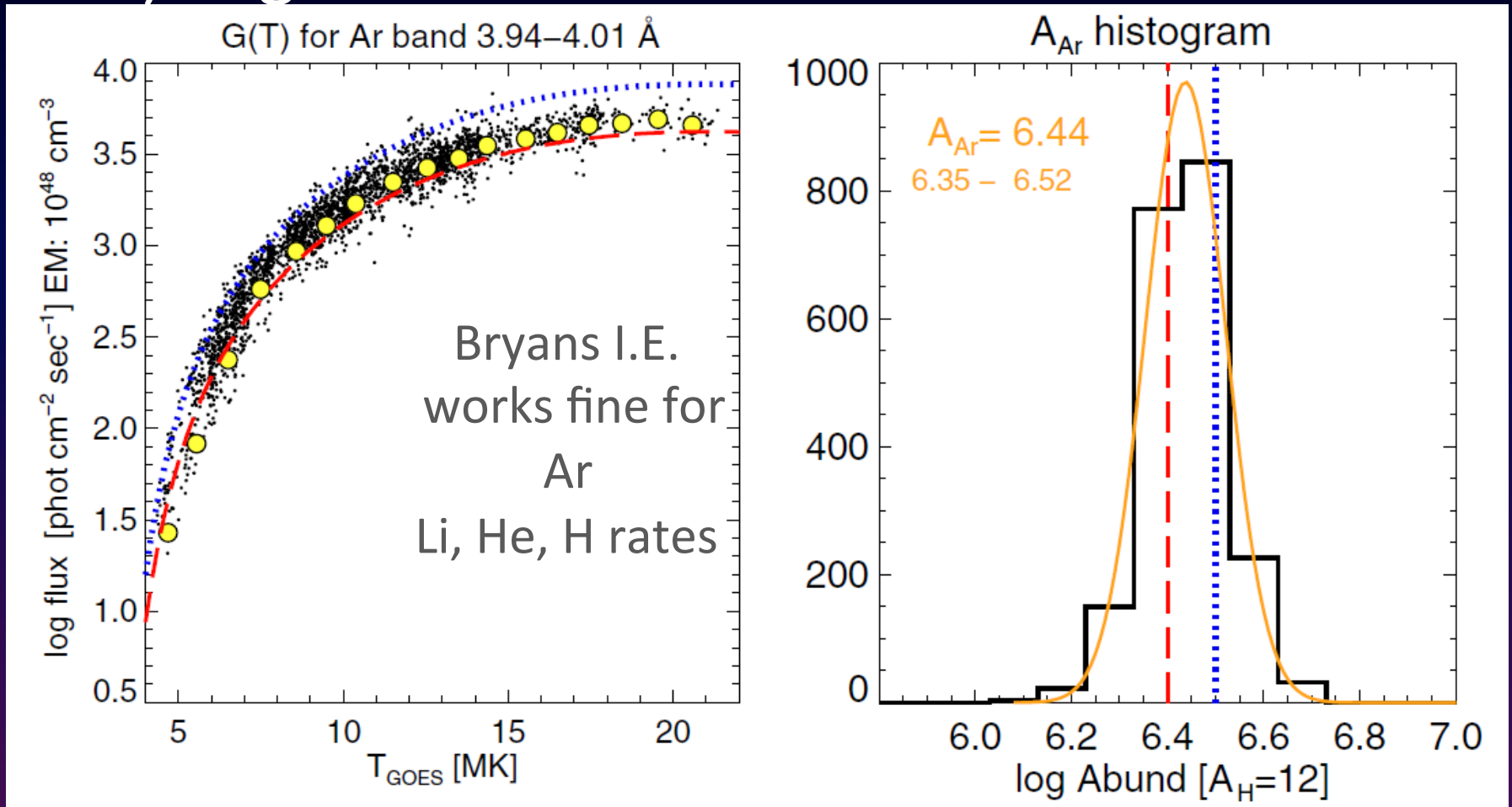


RESIK supported RHESSI (NASA)



RESIK many discoveries

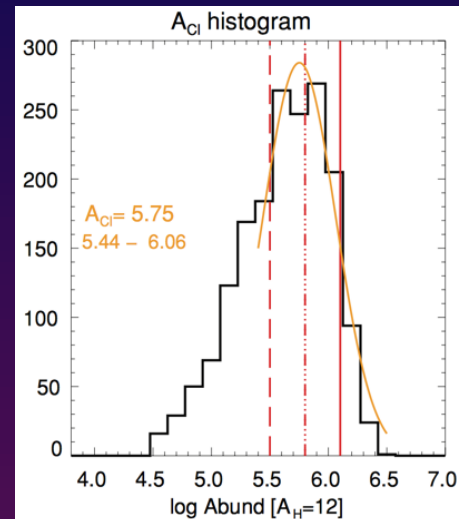
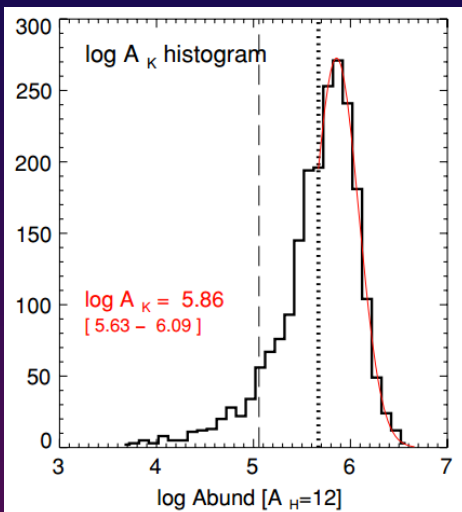
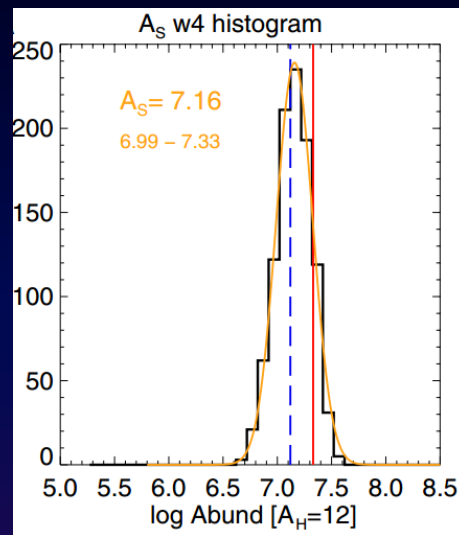
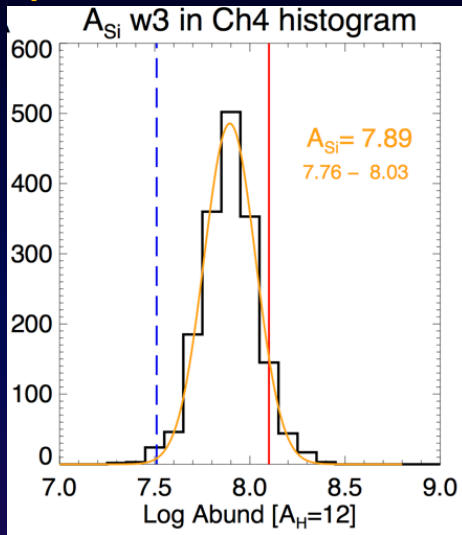
a) Argon absolute abundance on the Sun



Before RESIK, no spectral lines of Ar were observed on the SUN, so direct solar abundance of Ar was not known

RESIK many discoveries

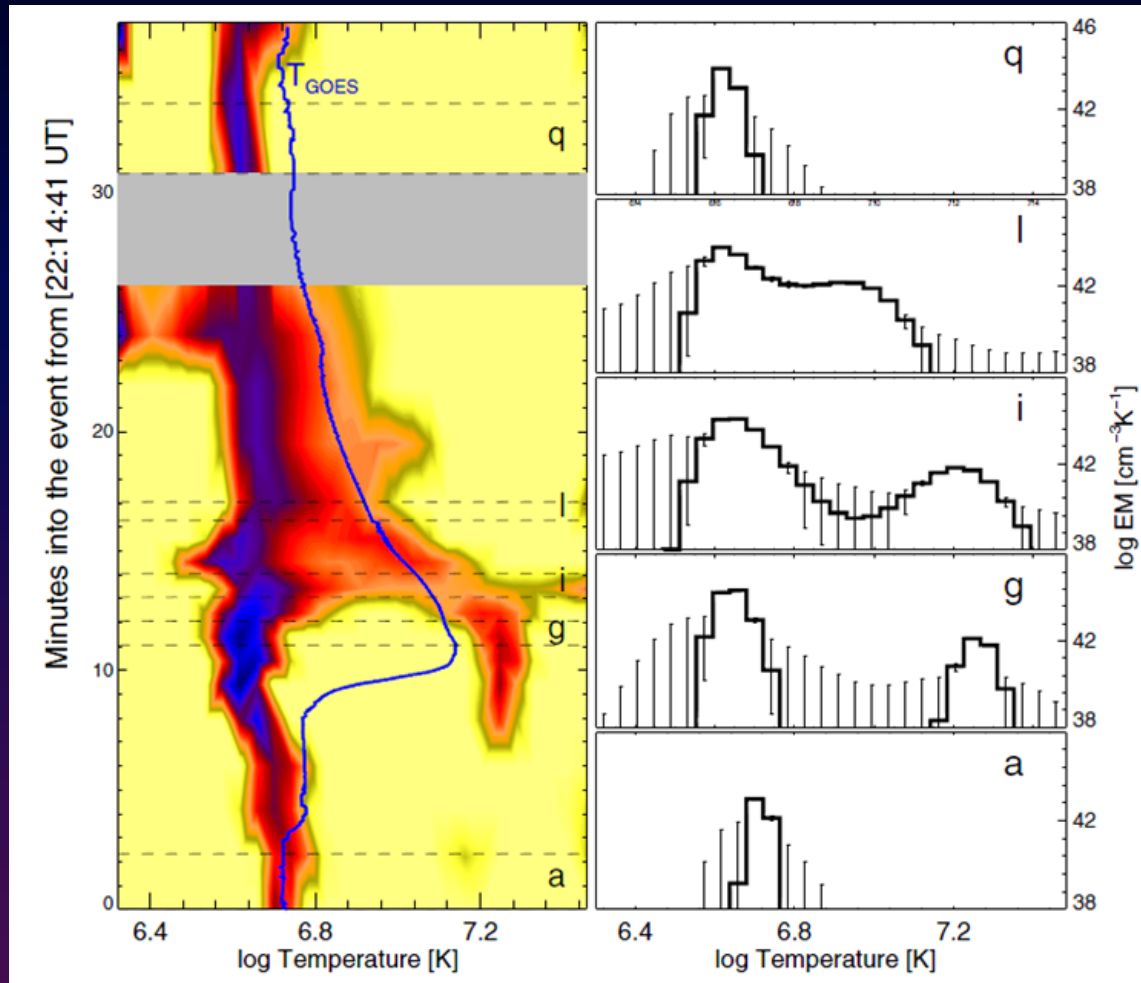
b) First coronal absolute abundances of Si, S, K and Cl



- Before RESIK, NO absolute abundances for the corona existed.
- Future common experiments with Russia (Interhelioprobe) will further fix the pattern of elemental composition in the part of solar atmosphere directly connected to Earth

RESIK many discoveries

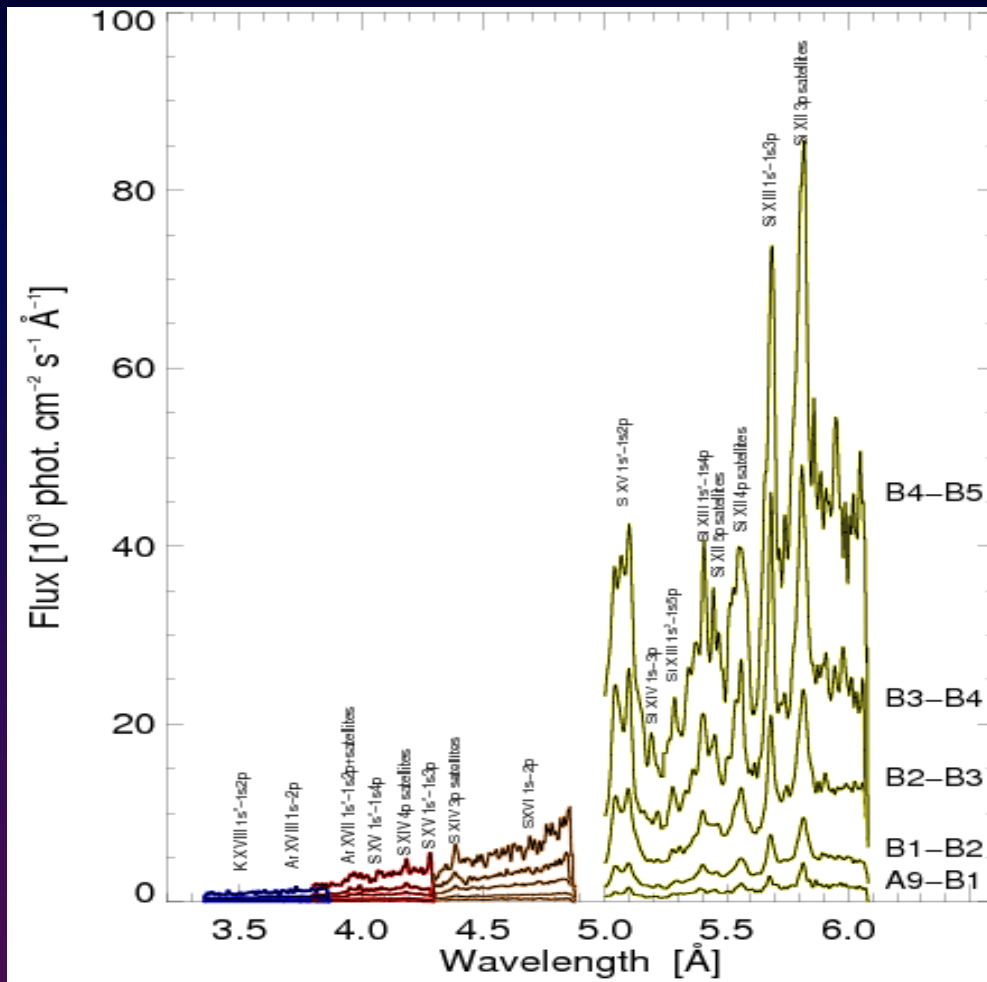
c) Differential emission measure distributions for flares



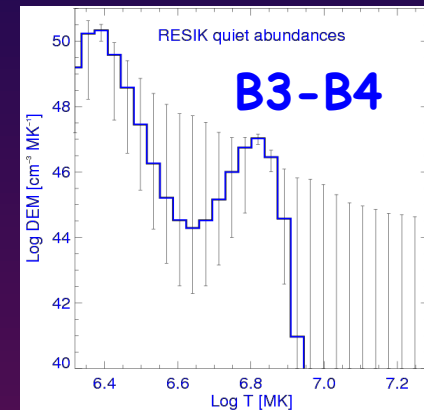
- Flare evolution from bottom to top
- Two components present During rise

RESIK many discoveries

d) Detection of hot component in non-flaring AR

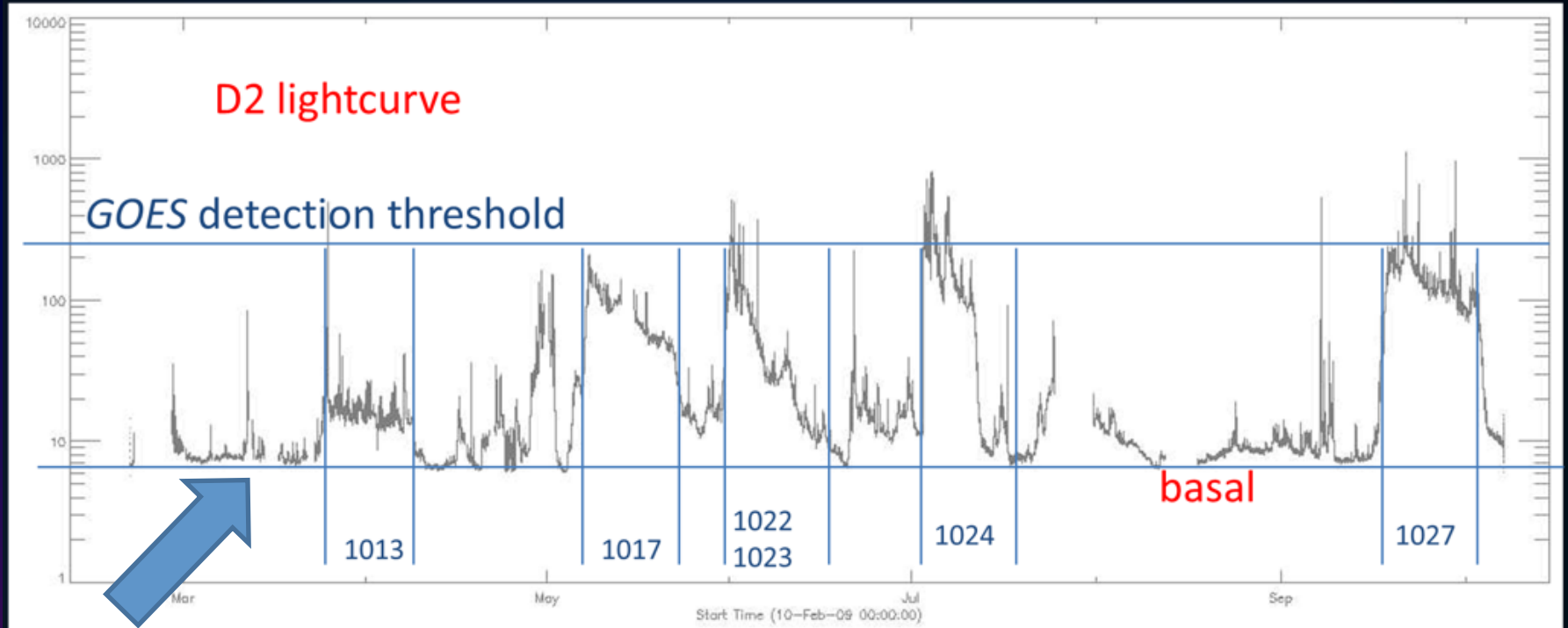


- Before RESIK, no spectra were measured for AR extending down to 3\AA



SphinX within TESIS

the highest (100x) sensitivity X-ray photometer ever

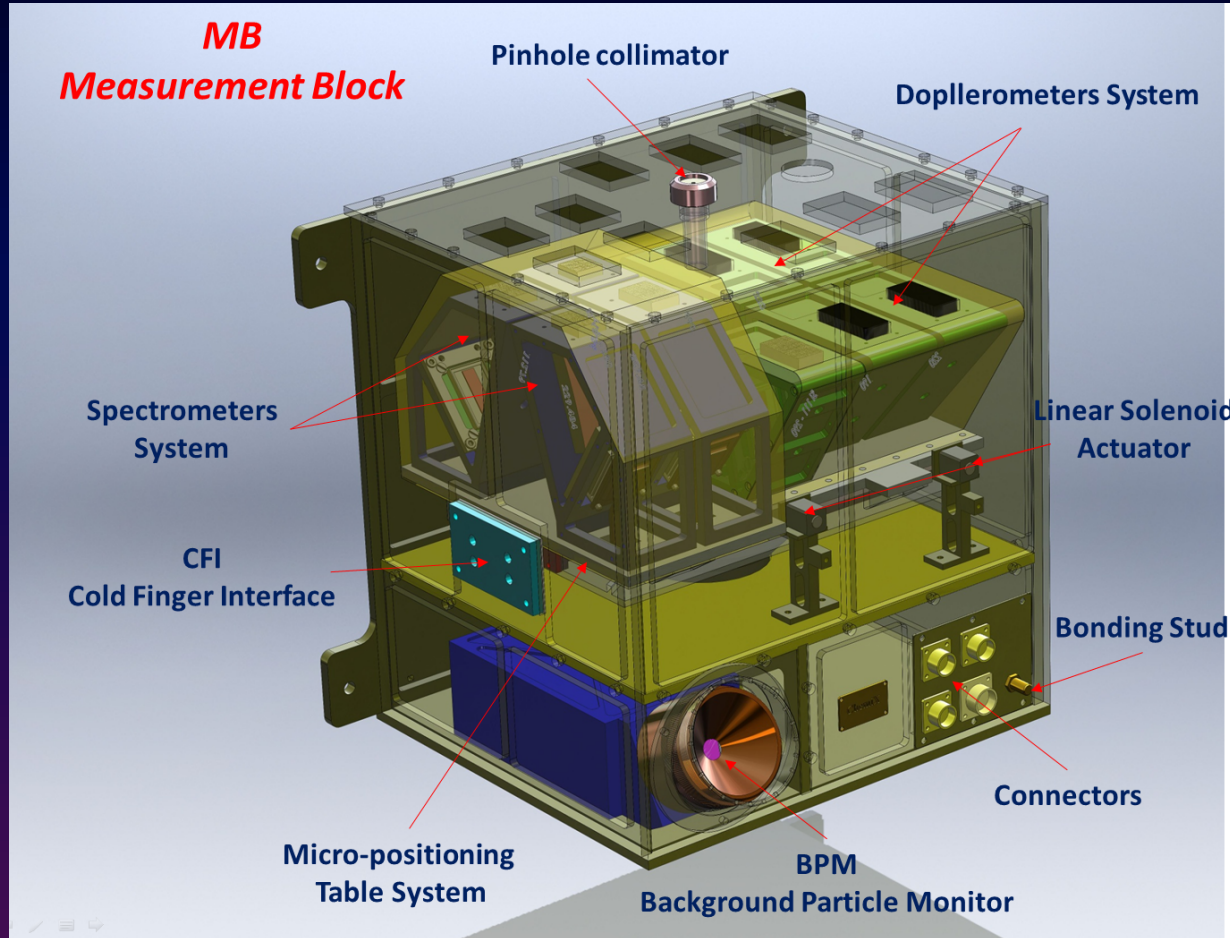


X-ray
emission

The future: ChemiX on Interhelioprobe general outlook

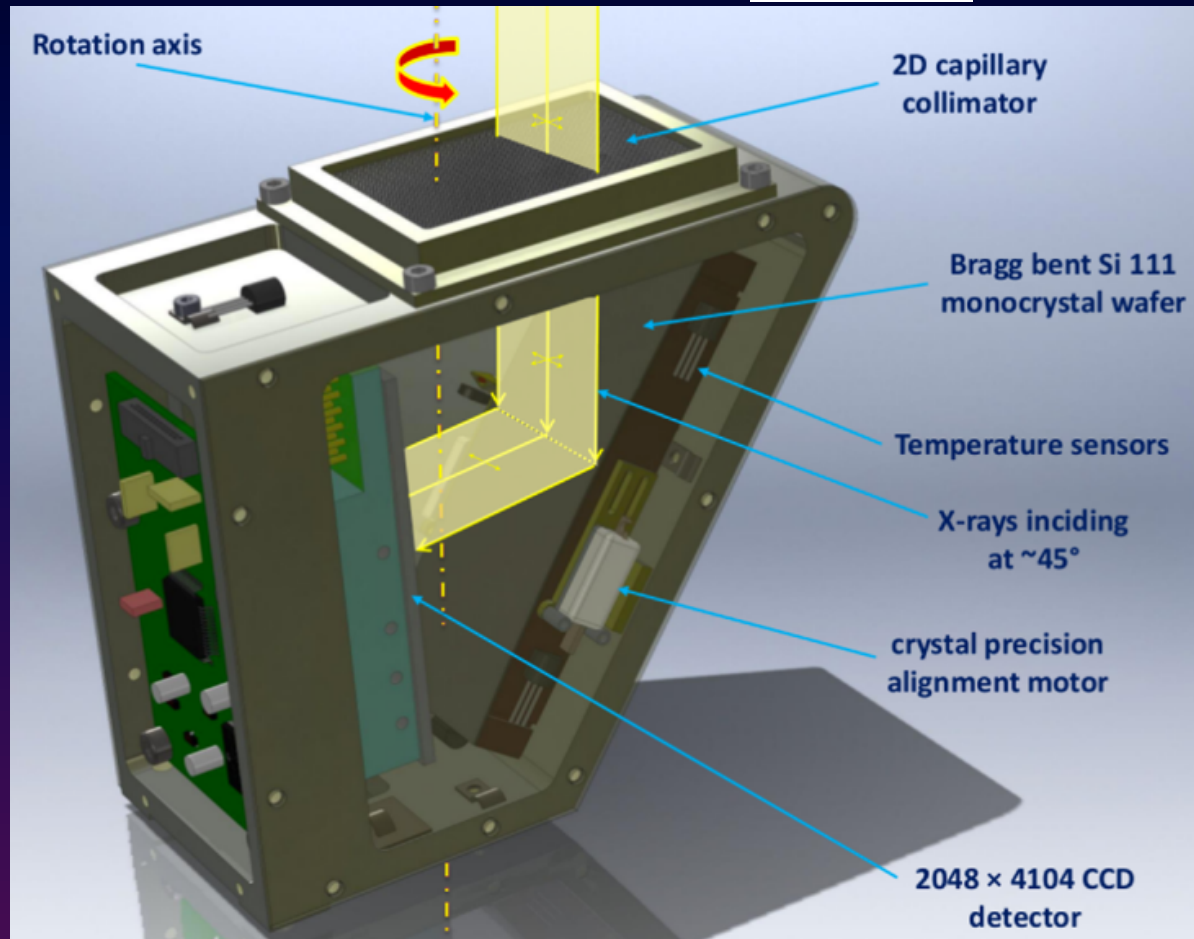


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- 4 crystals to record spectra in the 1.5 – 9 Å range
- 3 pairs (6) of identical crystals to observe Doppler motions of AR and flare plasmas
- Background particle detector (Kharkov)

The future: SolpeX on ISS



Never ever checked idea of using Bragg reflecton at the Brewster angle

Conclusions:

- RESIK was the **most successful** solar Bragg spectrometer ever flown!
- International collaboration was **PERFECT!**
- Results were published in leading astrophysical journals **The Astrophysical Journal**
- Total of **~30 papers published**
- Results were awarded with prestigious **RAS-PAS InterAcademy award in Science 2010**

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