

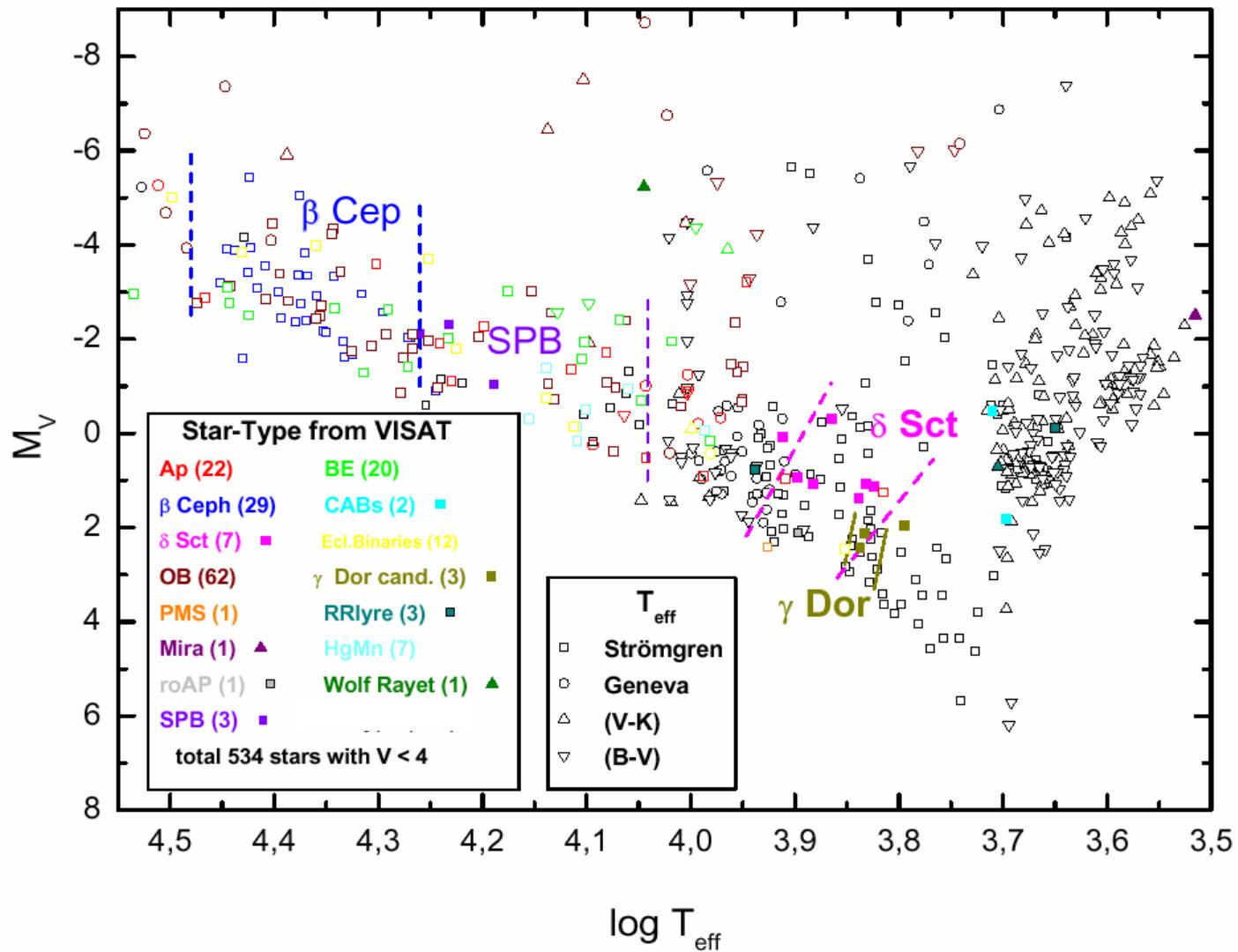
BRITE - Constellation



Why BRITE ?

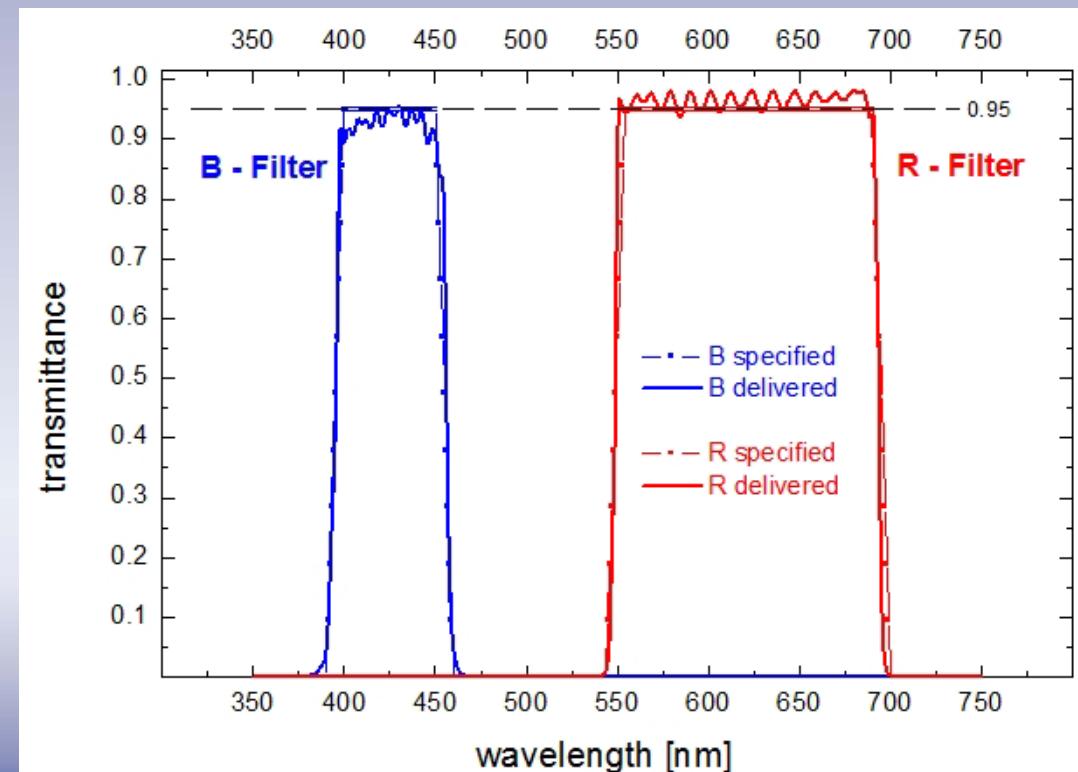
- ◆ **high precision photometry of bright stars**
 - ❖ ‘bright stars’ < 4 mag; goal < 7 mag
 - ❖ **very difficult to achieve from ground**

BRITE - HRD



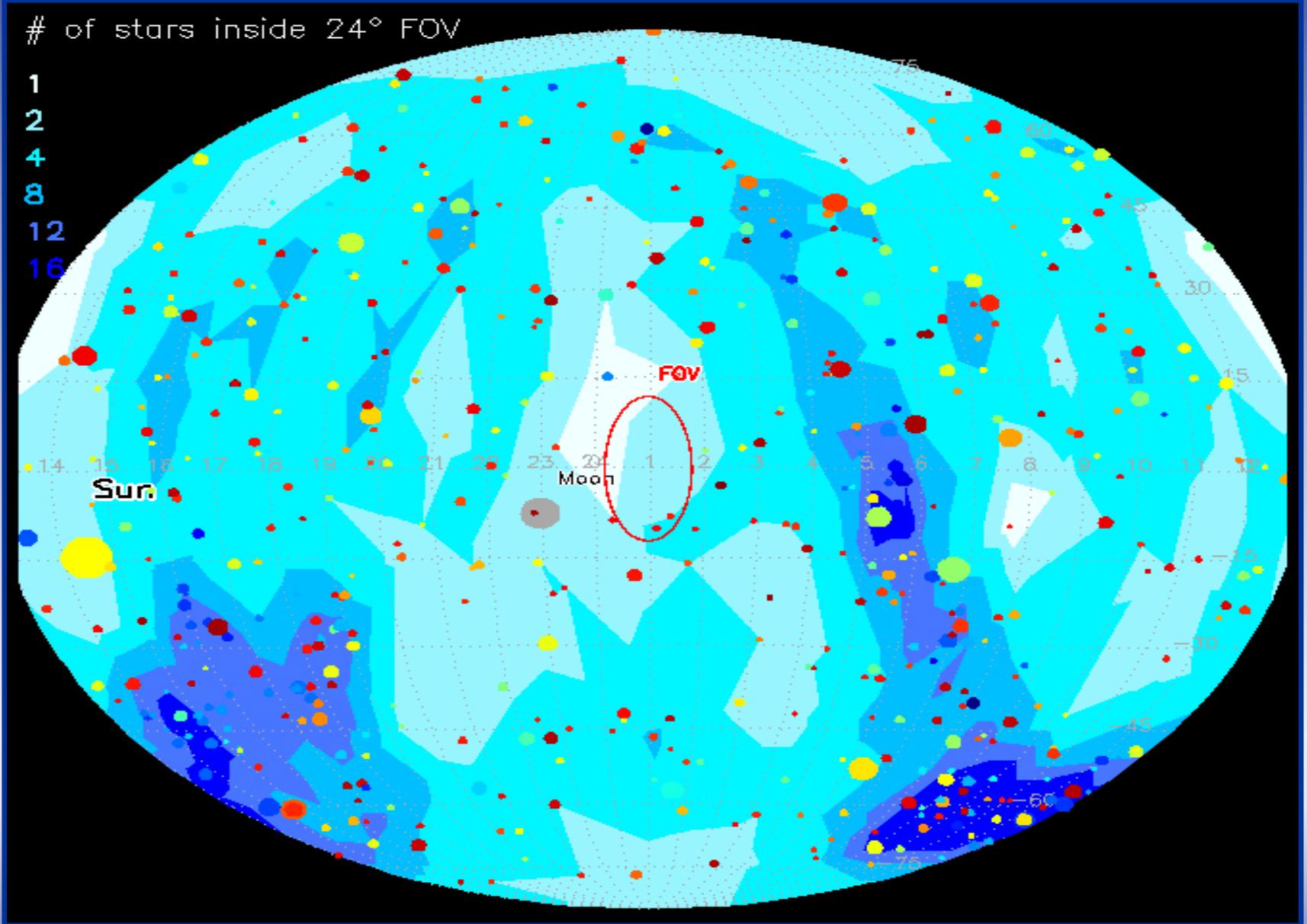
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- ◆ two nanosats -
two colors:
 - ❖ Red and Blue filter



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- ◆ **24° x 20° fov: simultaneously 2 to 18 bright stars, up to 200 stars mag < 7**



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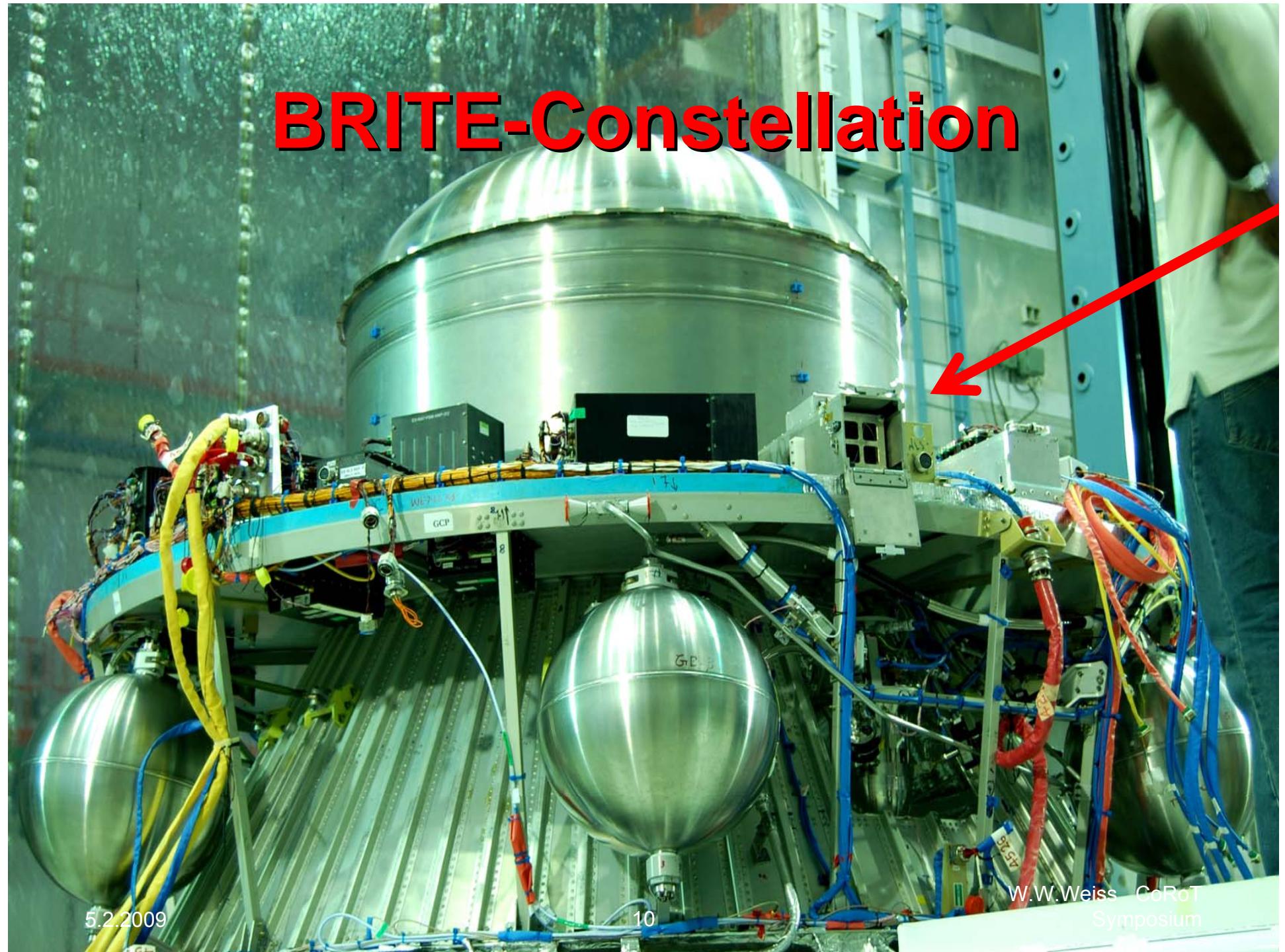
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- ◆ **24° x 20° fov: simultaneously 2 to 18 bright stars**
- ◆ **“full” sky access including polar region**
(... limits depend on the critical angle to the sun)

BRITE Assets

- ◆ Data strings can span more than one year.
 - ❖ $+80^\circ > \text{DE} > -80^\circ$: ~ 180 - 200d continuous coverage per year
 - ❖ polar regions: up to 300d
 - ❖ 1 to 40 data points per orbit ($P_o \sim 100$ min)

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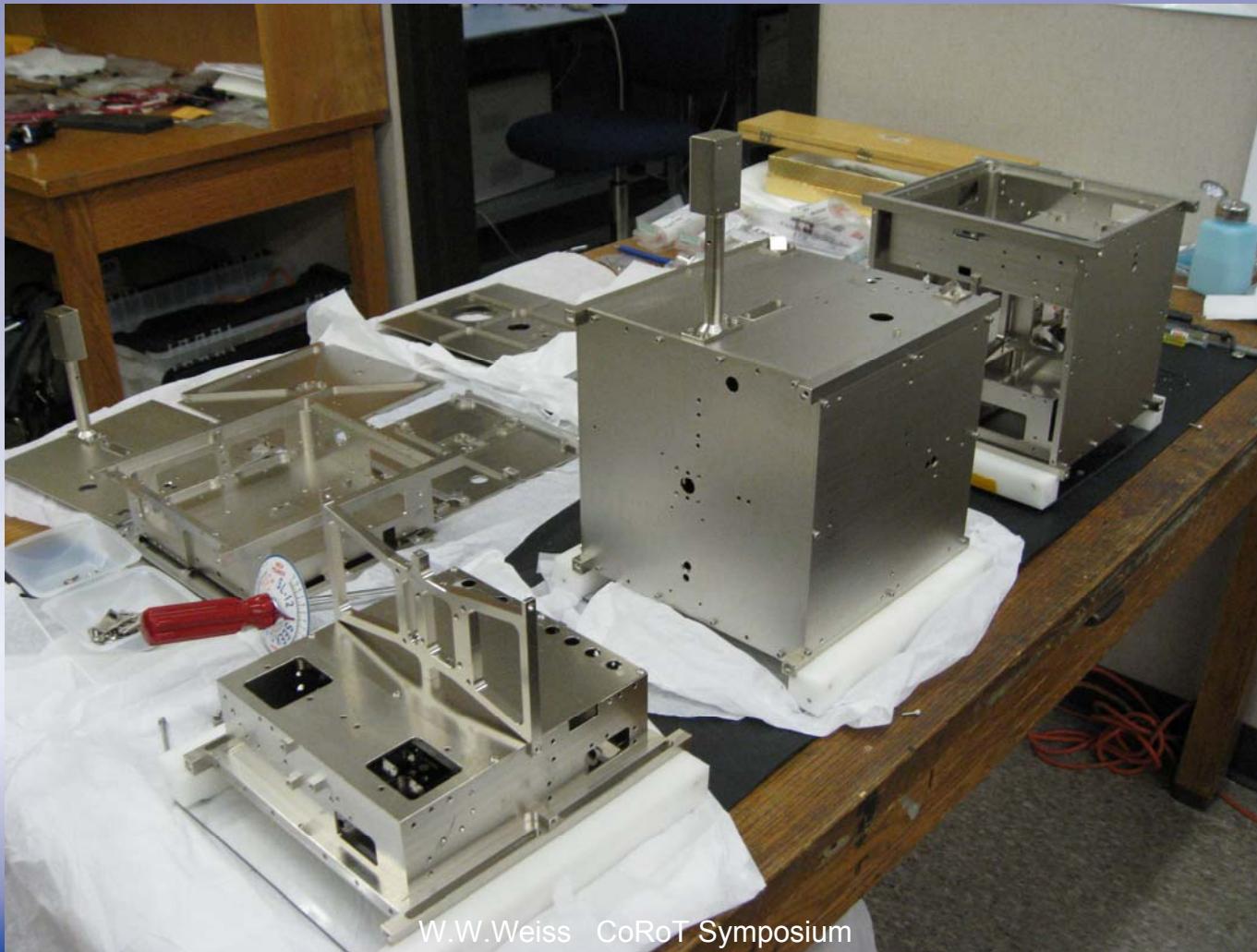


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- ◆ Ground based spectroscopy with high spectral & time resolution relatively easy to achieve
 - ❖ Spectroscopic network of 1 to 2 m class telescopes
Participants are welcome (please see me)!!

BRITE Basics

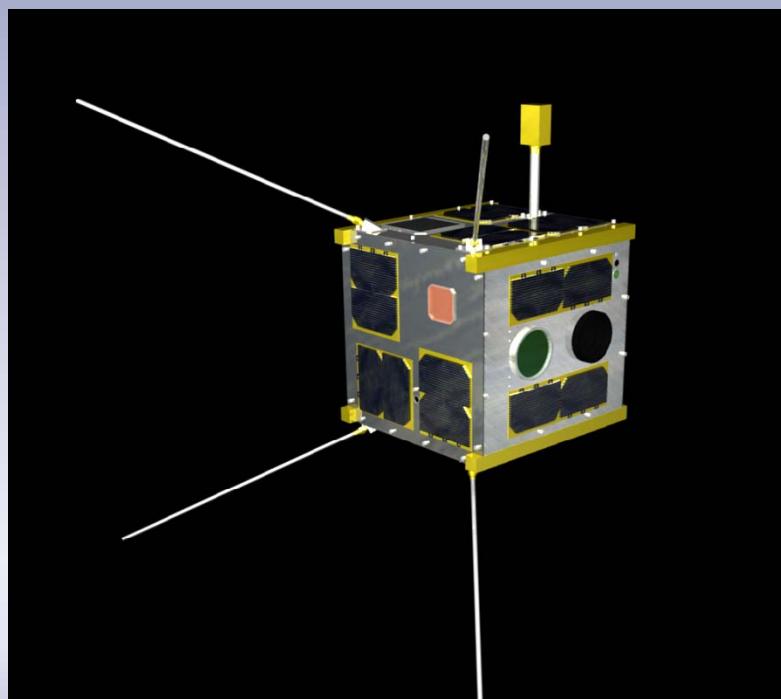
- ◆ 20cm cubes with < 7kg



BRITE Basics

20cm cubes with < 7kg

Pre-deployed antennas and booms



BRITE Basics

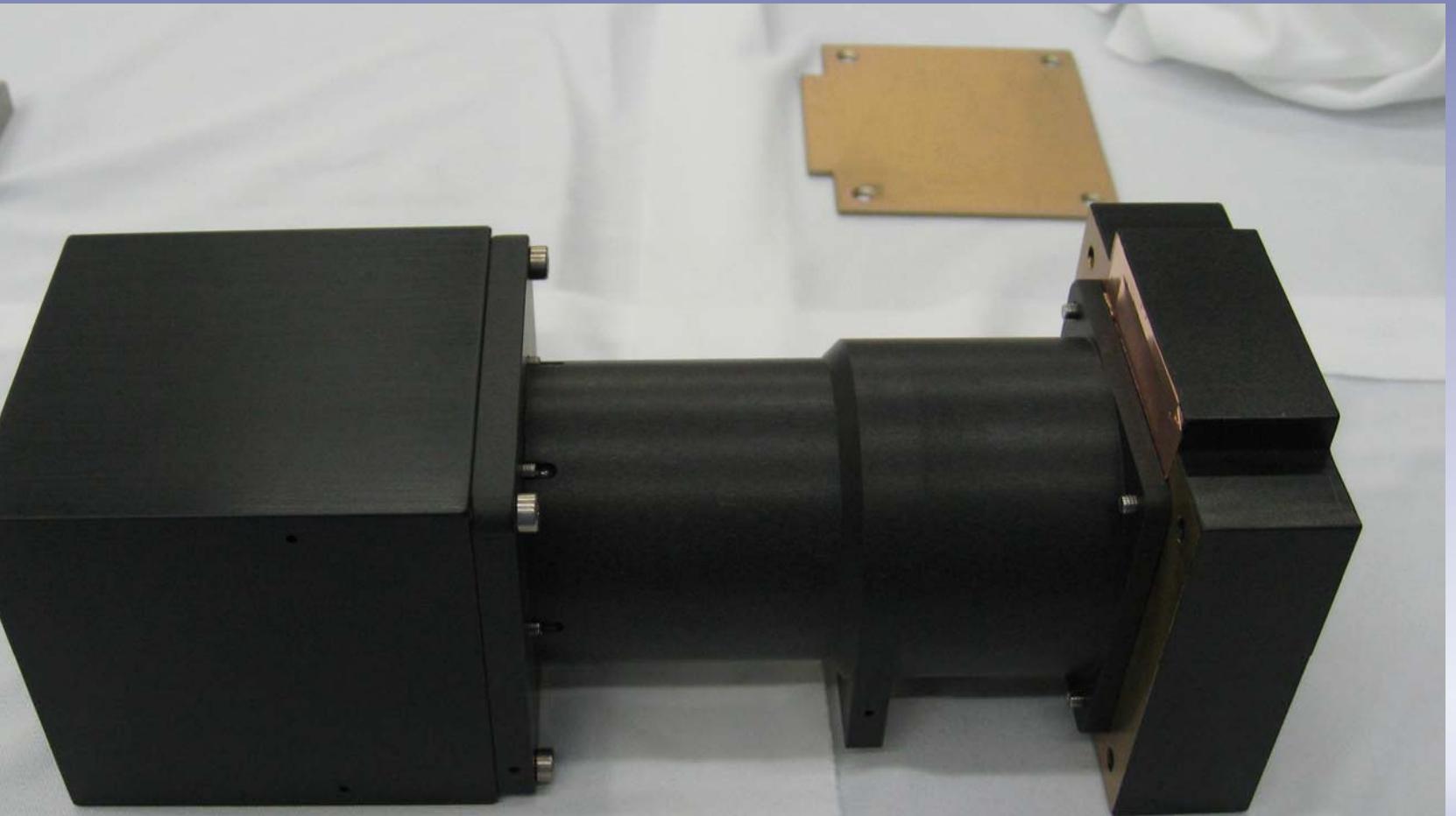
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Pre-deployed antennas and booms

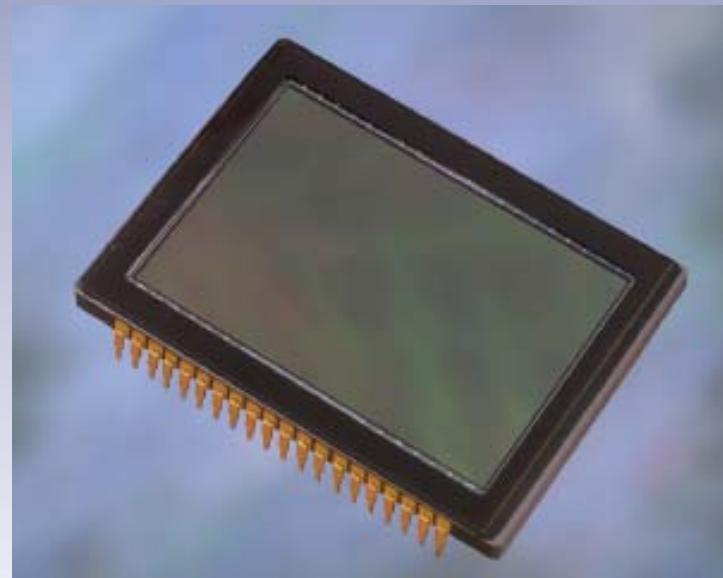
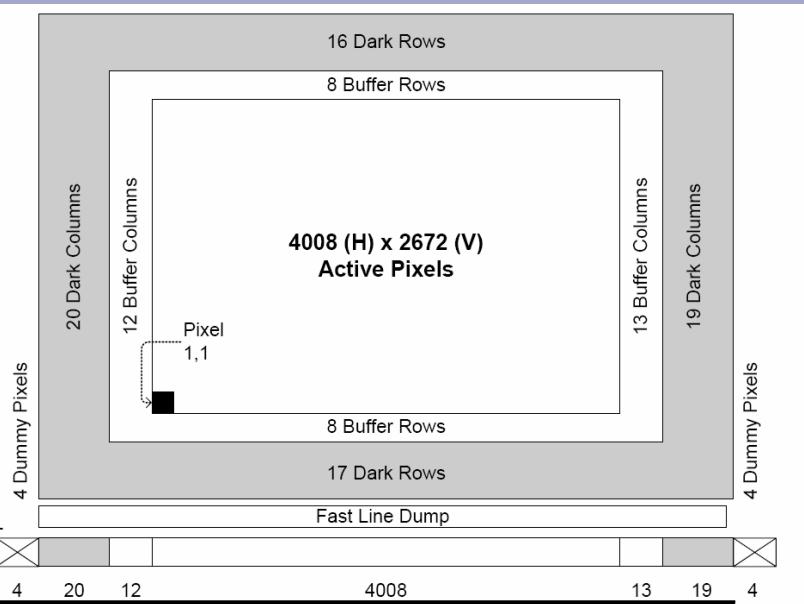
Telescope (Blue and Red):

- ❖ 11 Megapixel CCD
- ❖ Aperture = 3cm
- ❖ FOV = 24°

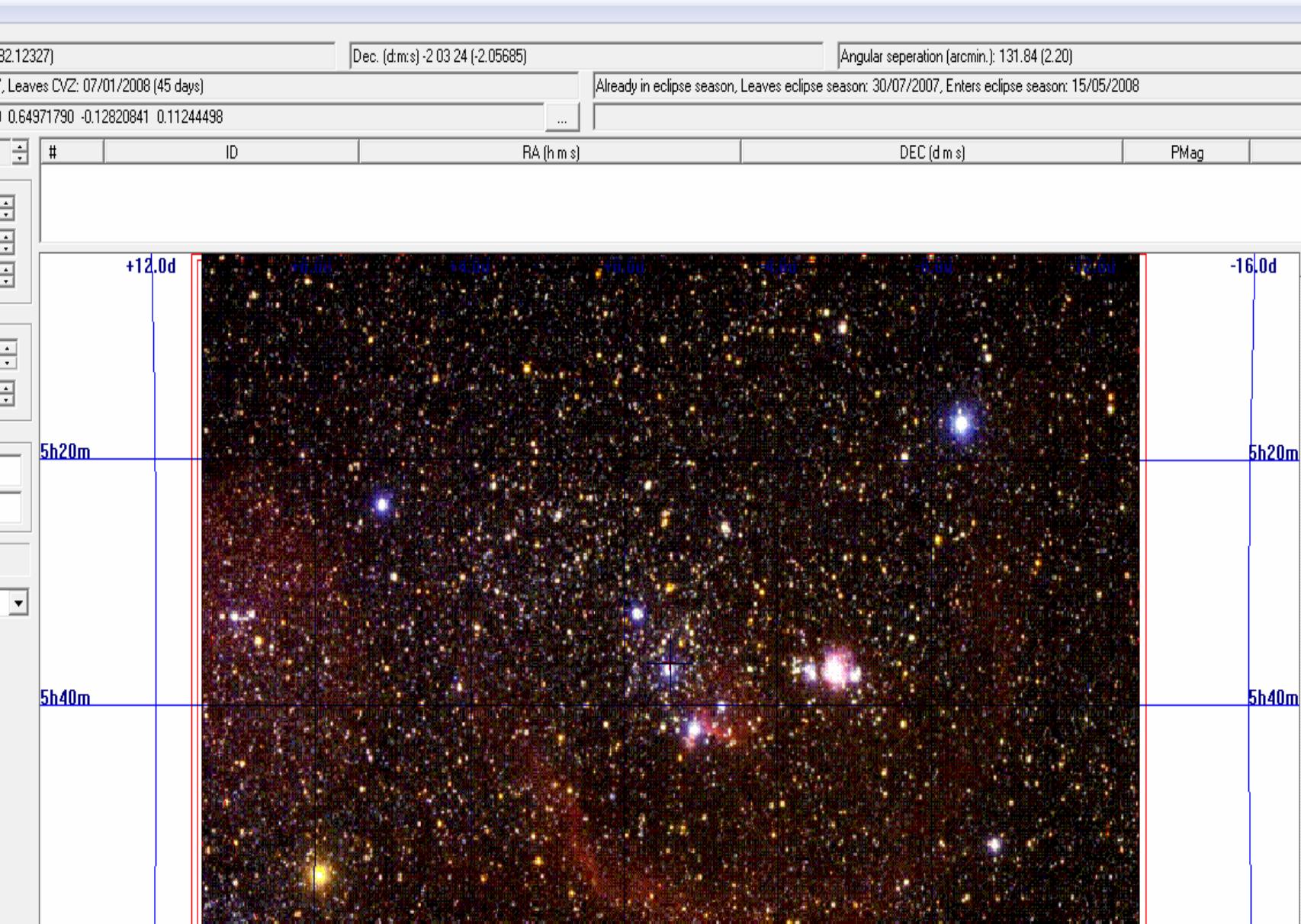
Camera



KODAK KA11002

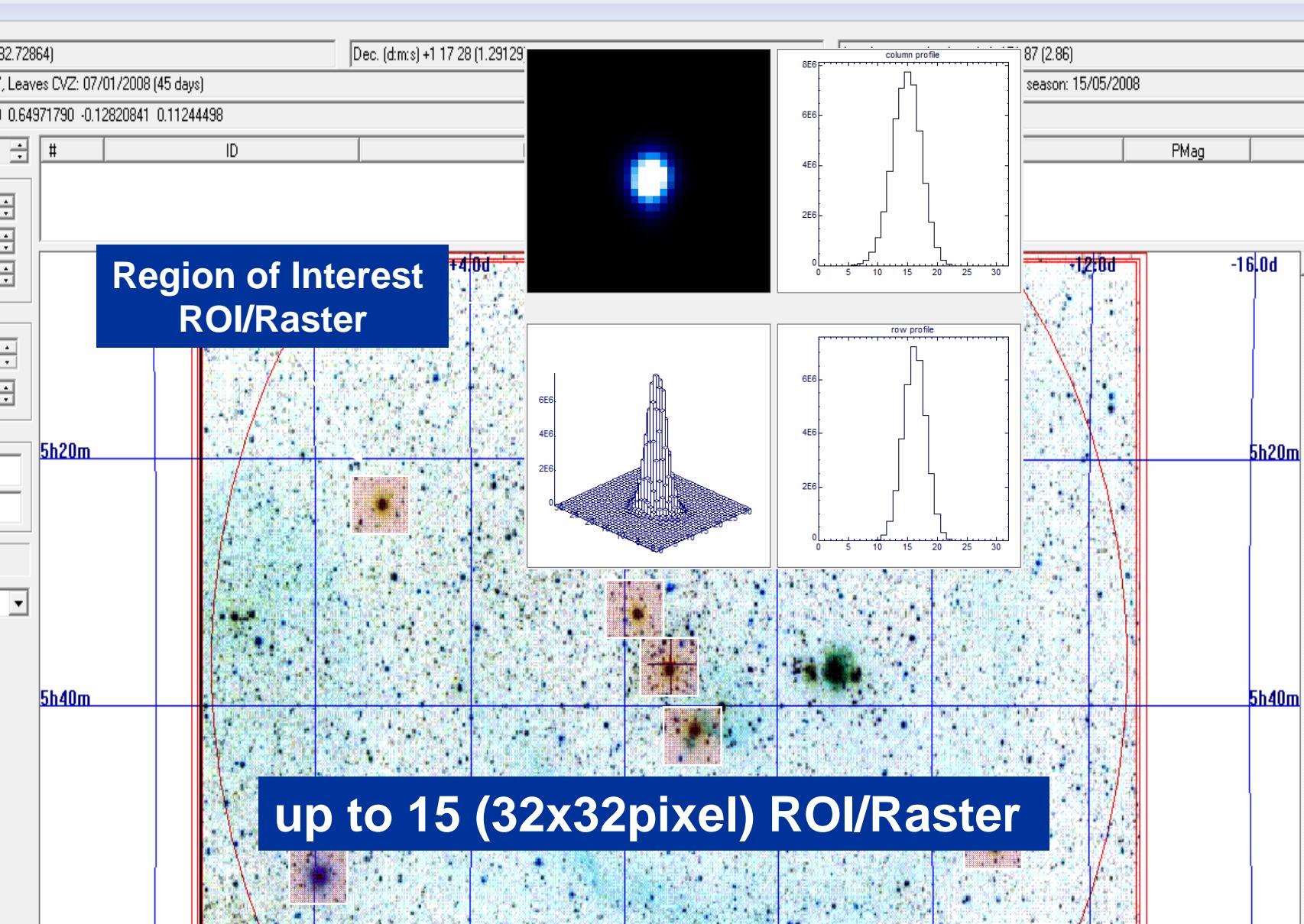


good performance at high (+20C) temperatures and
high frame rates

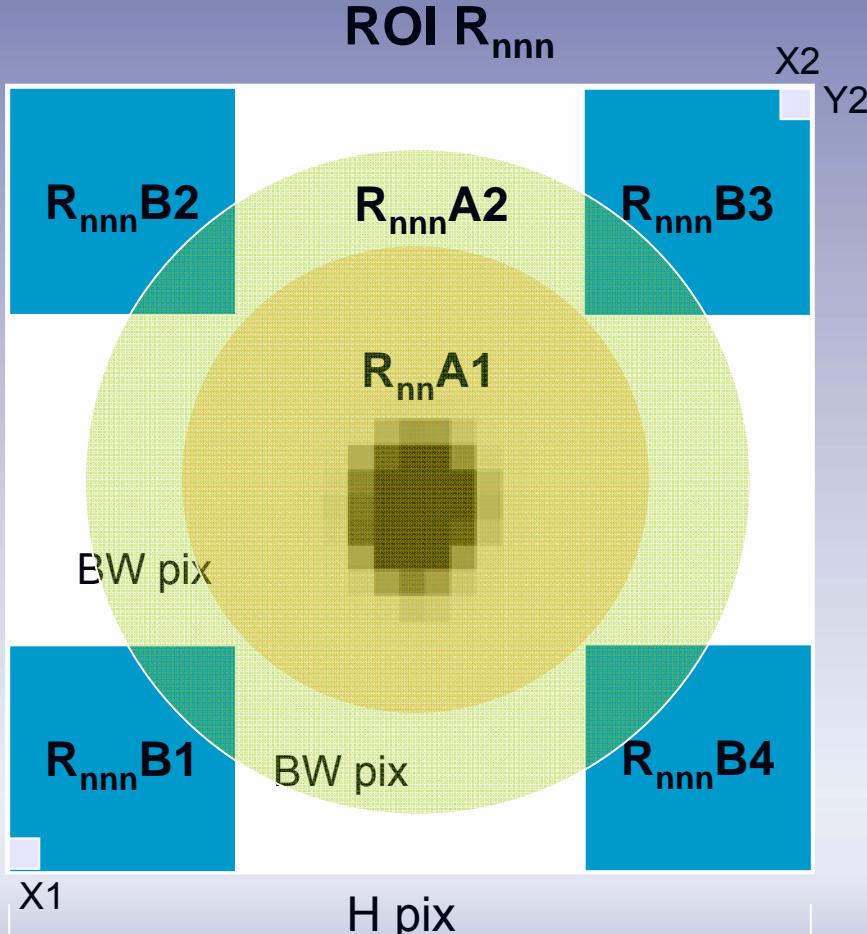


Reaction Wheels





Onboard Processing



sections:

$R_{nnn}B1-4$... backgrounds
 $R_{nnn}A1-2$... apertures

processed data:

for each background
median and sigma are
calculated

+

the sum of signals values
encompassed in the two
apertures

a total of 10 values

BRITE Status Summary



- ◆ development of the hardware underway
- ◆ completions of both satellites mid-2009
- ◆ launch expected for 4Q/2009 or 1Q/2010



<http://www.brite-constellation.at/>



Science
Spacecraft
Payload
Teams
Outreach

BRITE-Constellation consists of **UniBRITE** and **BRITE-AUSTRIA (TUG-SAT1)**, two **20 cm cube nanosatellites**. Each will fly a **small aperture telescope with a CCD camera** to perform high-precision two-color photometry of the brightest stars in the sky (≤ 4 th mag) continuously for up to several years.

The primary **science goals** are studies of **massive and luminous stars** in our neighbourhood, representing objects which dominate the ecology of our Universe, and also **evolved stars (giants)** to probe the future development of our Sun. The **wide field cameras (24°)** will also obtain data from other scientifically interesting stars to investigate their stellar structure and evolution. All of that is enabled by innovative technology currently developed in collaboration between **Canada** and **Austria**. A **launch** of **UniBRITE** and **BRITE-AUSTRIA** in early **2009** is envisioned. An expansion proposal of the



NEWS



BRITE Team

AUSTRIA

- Science

- U Vienna

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Instrument Scientist
 - A. Kaiser
System Analyst
 - M. Breger
 - E. Dorfi
 - G. Handler
 - F. Kerschbaum
 - K. Zwintz
 - a.o.

- Technology

- TU Graz.

- O. Koudelka
PI BRITE-AUSTRIA
 - G. Egger
 - B. Jossek
 - P. Schotter

- TU Vienna

CANADA

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- A. Moffat
PI BRITE

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Instrument Scientist
 - M. Kerkwijk
 - J. Percy
 - S. Rudzinsky

- U British Columbia

- J. Matthews

- Technology

- U. Toronto-IAS-SFL

- R.Zee
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 - D. Foisy
 - C. Grant
 - a.o.

- Dynacon

- A. Beattie

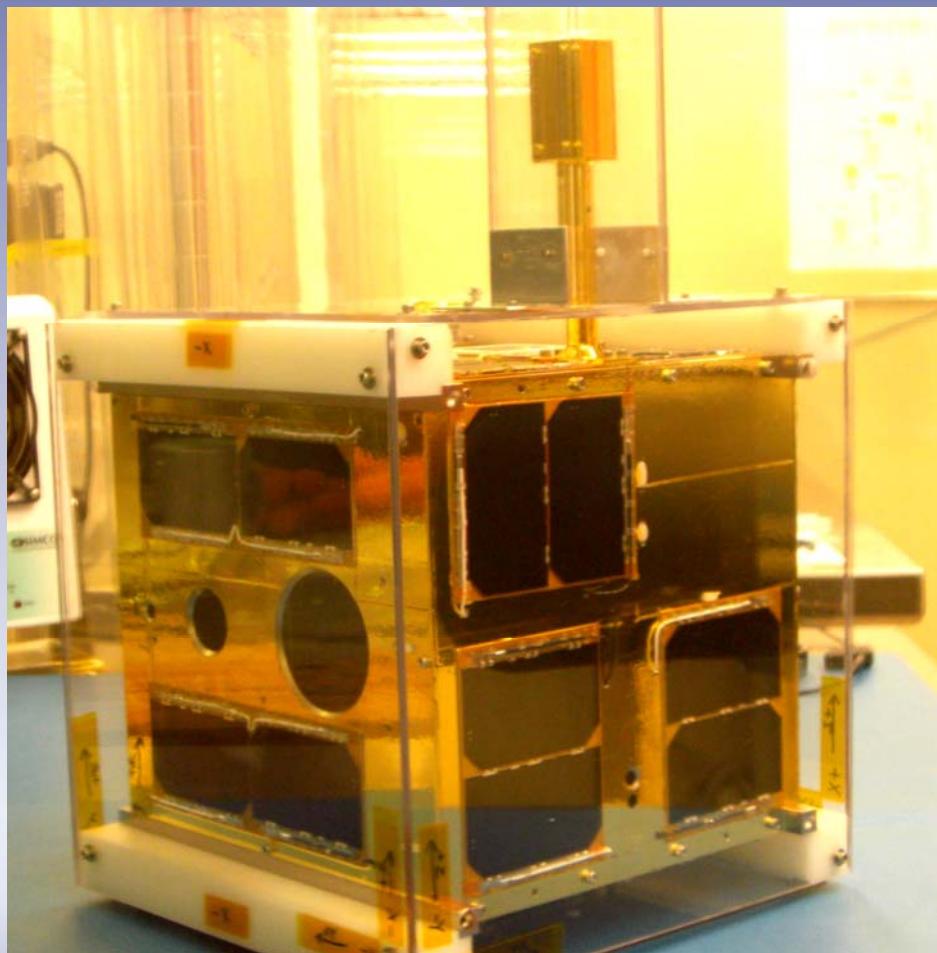
- Genvalo Optics

CoRoT & KEPLER

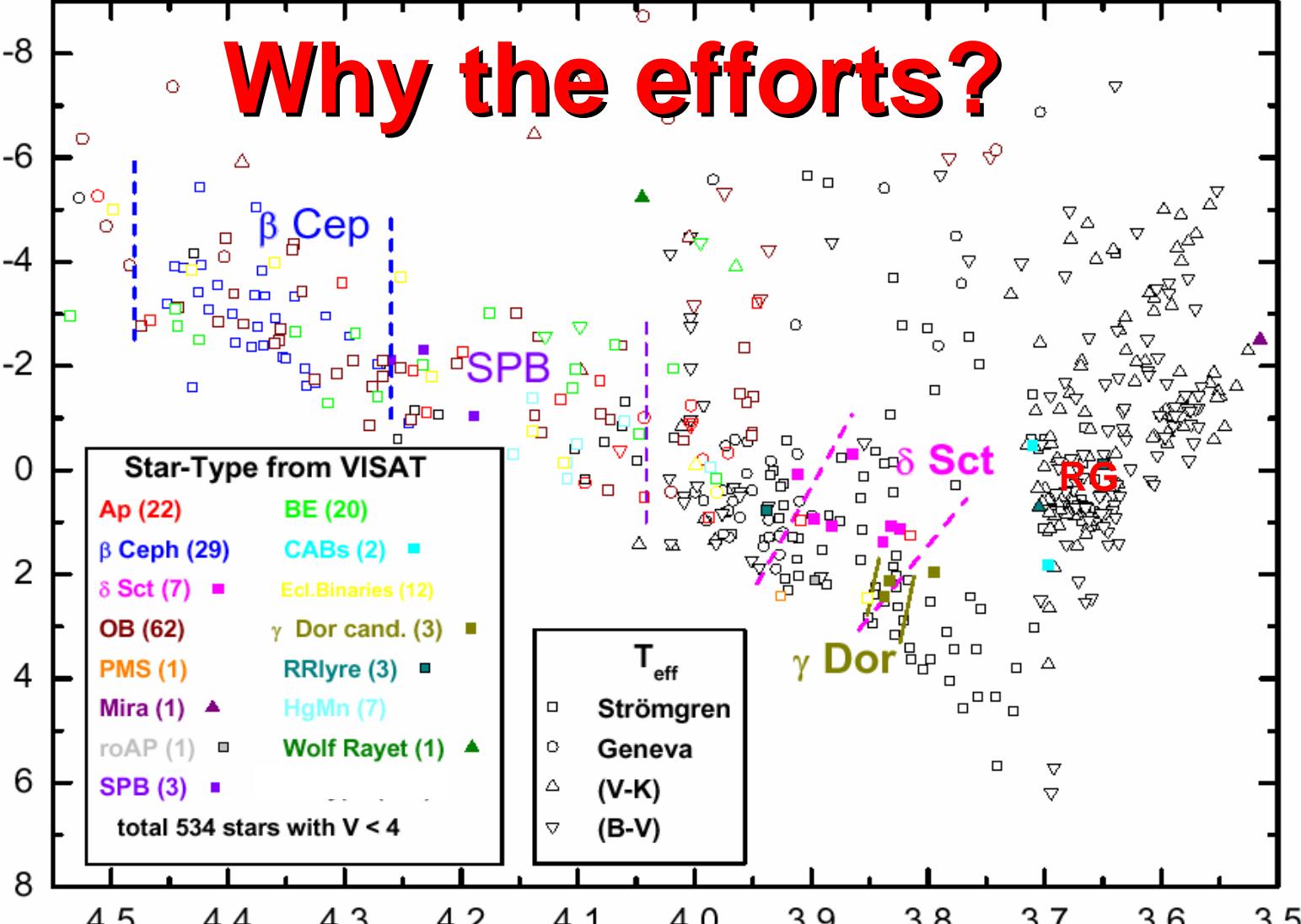
Bright stars

Two colors

All sky



Why the efforts?



STARS

WHAT DO NANO-SATS
AND MEGA-SATS
HAVE IN COMMON?

GOOD
VIBRATIONS
... !



THANK YOU