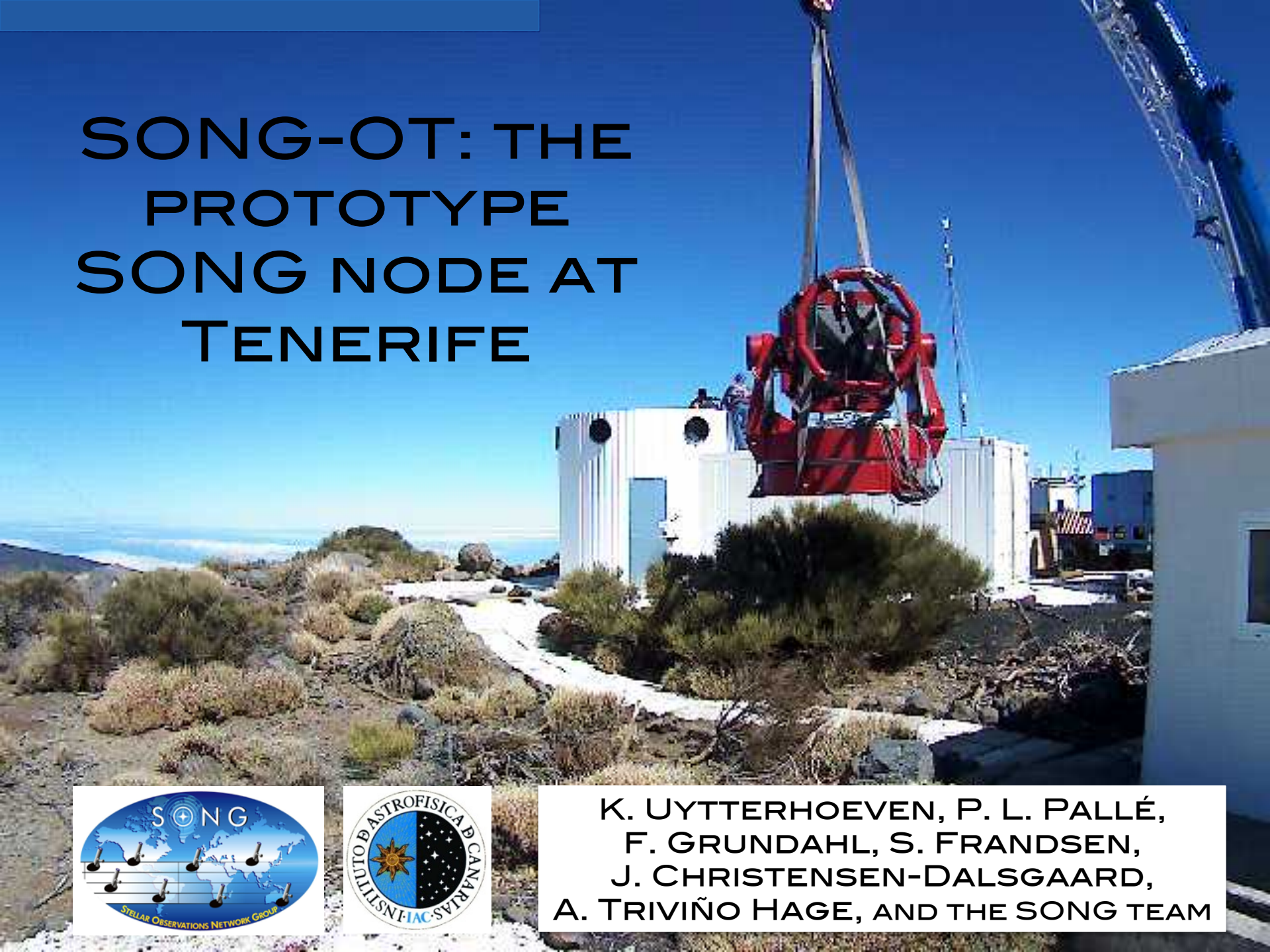
SONG-OT: the prototype SONG node at Tenerife



K. Uytterhoeven, P. L. Pallé, F. Grundahl, S. Frandsen, J. Christensen-Dalsgaard, A. Triviño Hage, and the SONG team

Stellar Observations Network Group

led by Aarhus University, Denmark

= Network of 1m robotic telescopes located at different latitudes and longitudes to ensure continuous monitoring

Science (dedicated campaigns):

1. Asteroseismology of bright stars

RV and line-profile studies (V<6mag)

2. Detection and characterization of planets

Microlensing method (photometric imaging)
Doppler velocities

A typical SONG node consists of:

1m alt-az robotic telescope

High-res échelle spectrograph

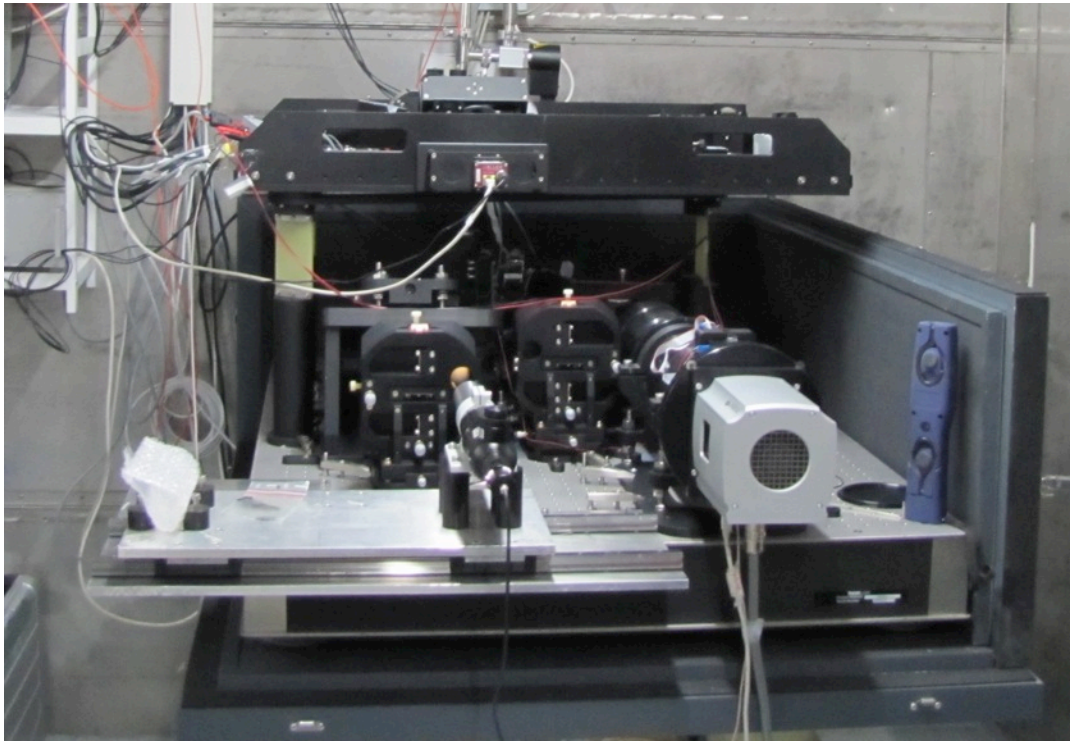
Dual-colour lucky imaging cameras

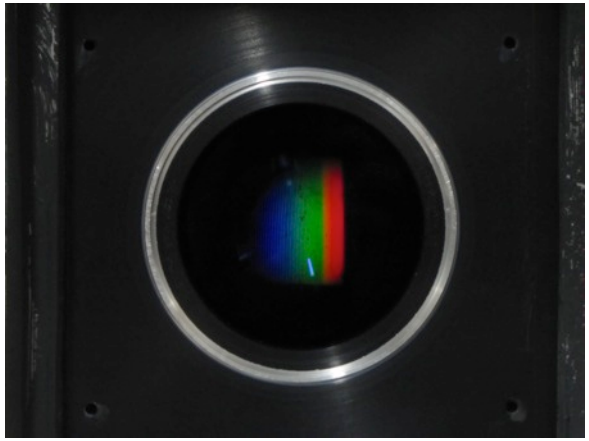
High-resolution échelle spectrograph (coudé instrument)

Wavelength region
4800-6700Å

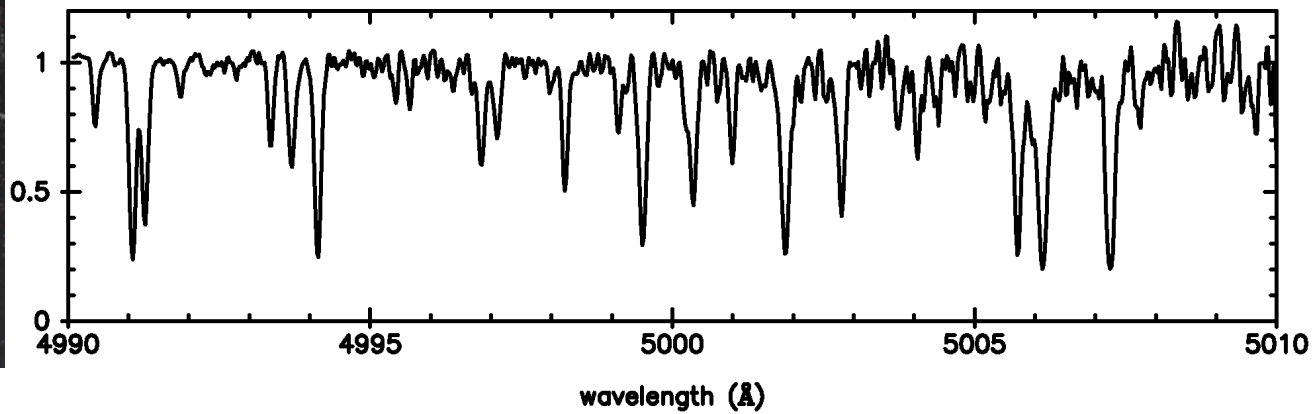
Resolution up to
R~110,000

With or without
iodine cell

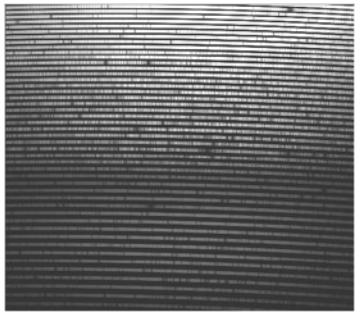




Solar spectrum observed by SONG



Spectral reduction packages



-Standard pipeline reduction: REDUCE

(Piskunov & Valenti 2002)

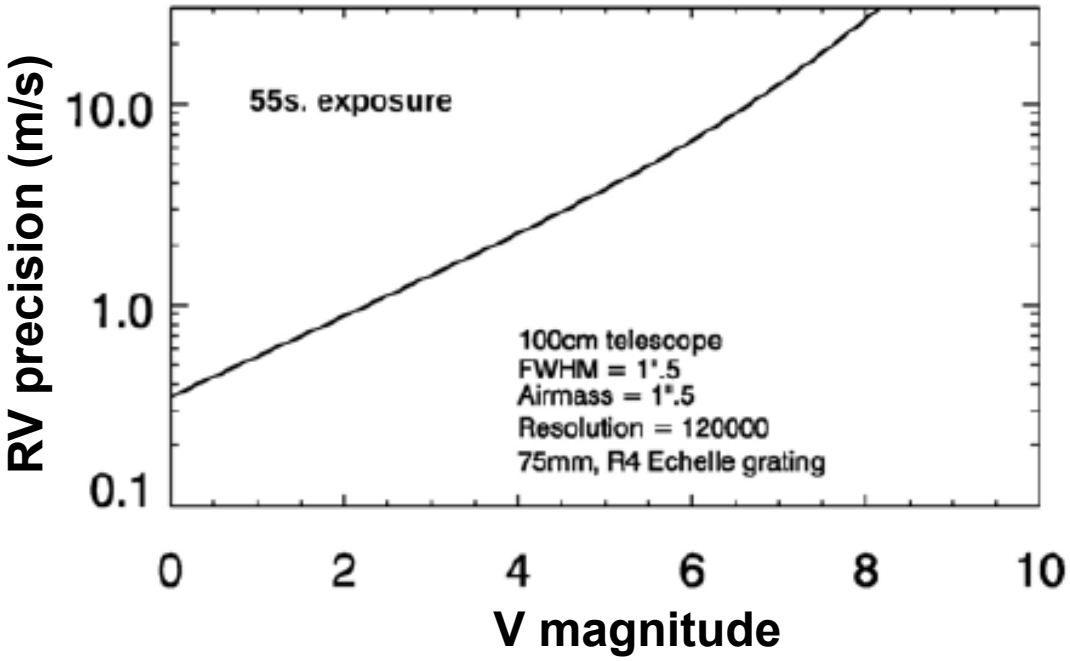
- Radial velocity determination using the iodine Absorption cell technique: iSONG

(Butler et al. 1996)

Triviño Hage et al., 2012, AN, 333, 1107

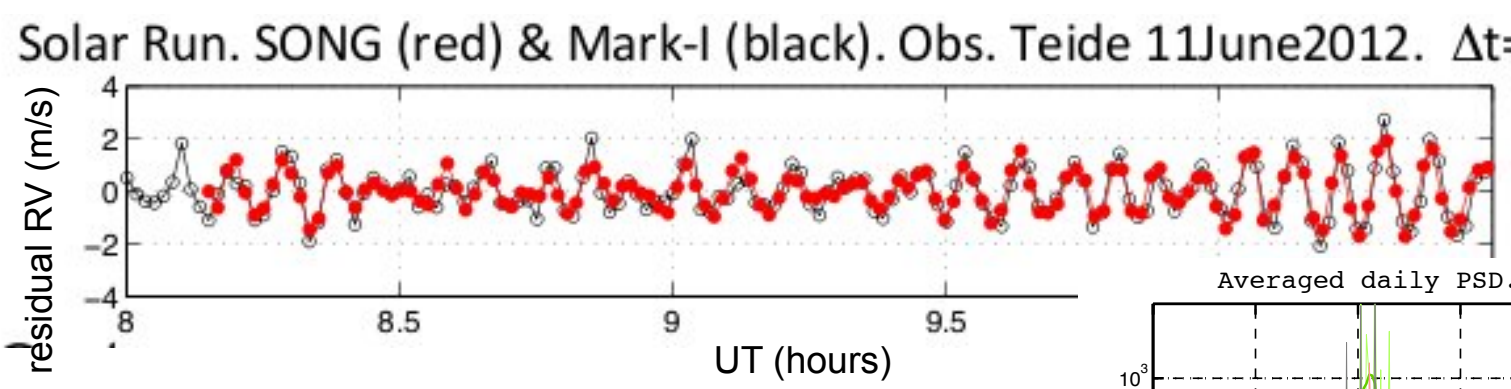
corsaro et al., 2012, A&A 537, 9 (β Aquilae)

Antoci et al., submitted (ρ Pup)



Expected RV precision

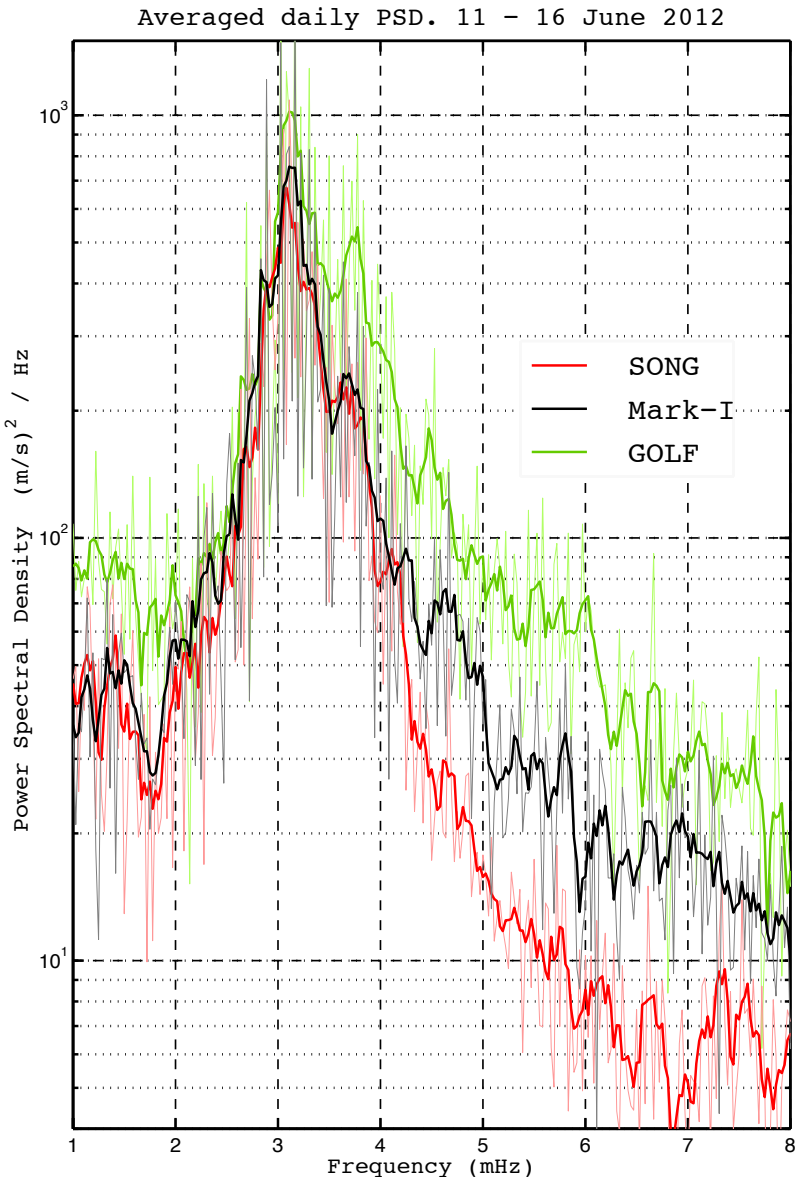
1m/s < RV precision < 10m/s
for 2 < Vmag < 6
Texp = 55sec



(Pallé et al., 2013)

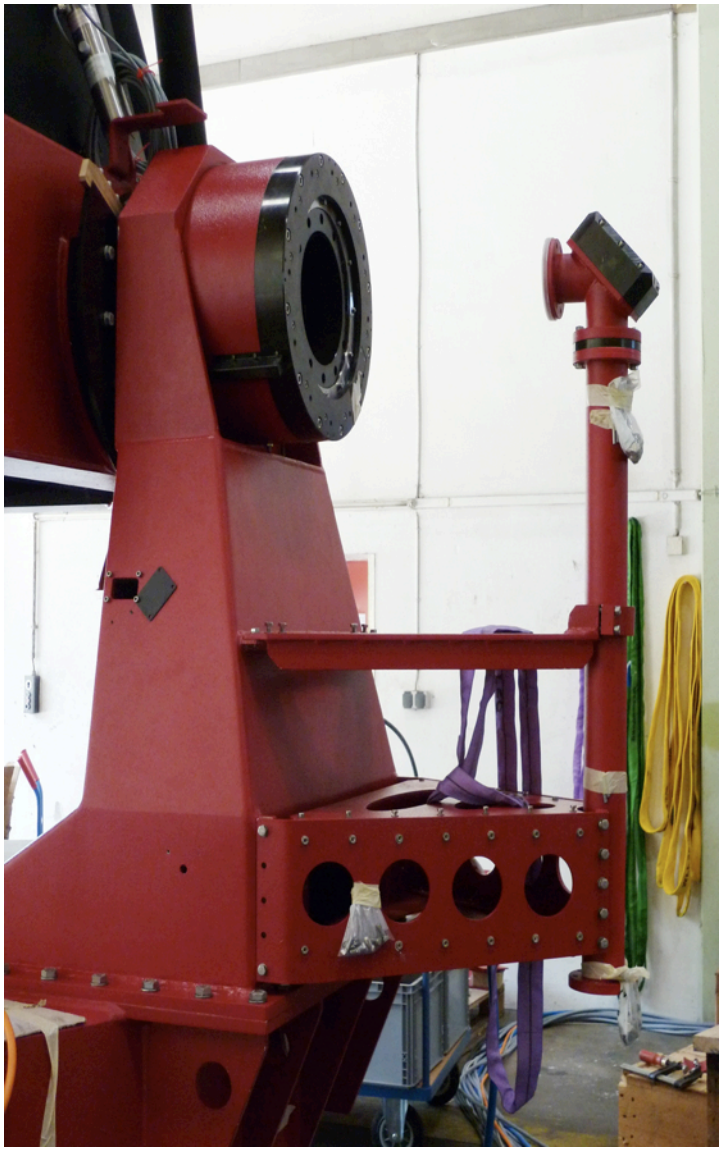
1-week SOLAR time-series June 2012

- FIBER-FED OBSERVATIONS SONG
  -> ÉCHELLE SPECTRUM WITH I2
- MARK-I (BISON NETWORK)
  -> POTASSIUM KI 7699Å LINE
- GOLF (SOHO SATELLITE)
  -> NA D1 – D2 LINES 5890-5895Å



Dual-colour Lucky Imaging cameras
(nasmyth instruments)

- wavelength split near 6500Å
- filterwheel with 6 positions:
Main filters V and I
- FOV 46" x 46" with 0.09 pixels
- Full frame-rate up to 34Hz
- default readout time ~1sec



Note: also available in normal imaging mode

Danish proto-type node = SONG-OT

delays....

↓

installation April 2012

↓

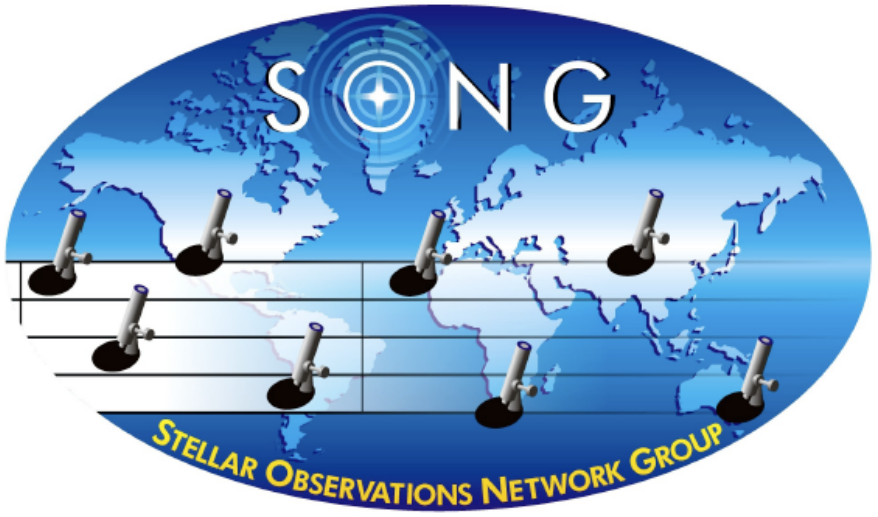
delays....

↓

'Factory acceptance' still pending

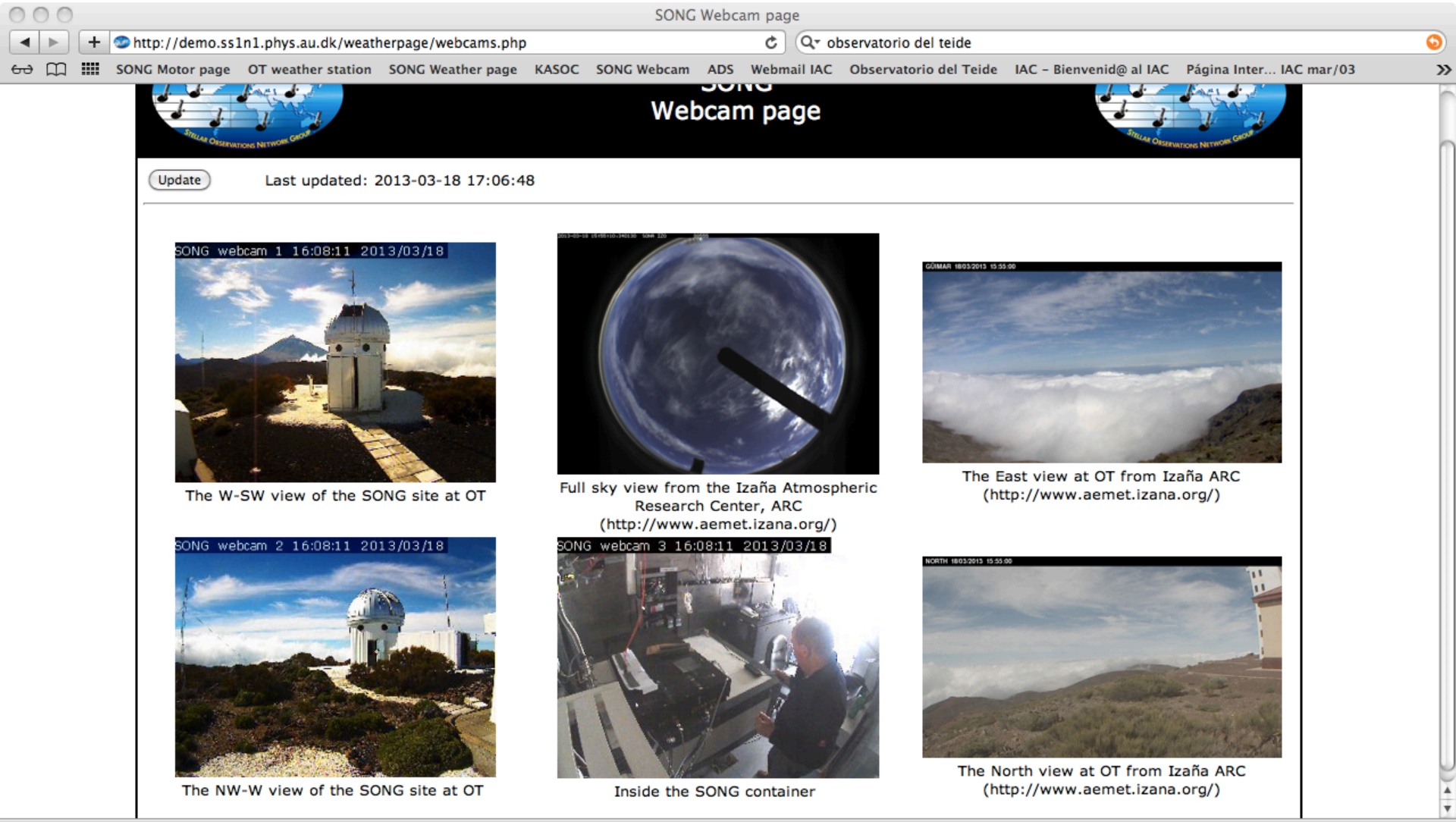
↓

First light foreseen in the near future!



Status of other nodes?

- Chinese node at Delingha Observatory: installation Summer 2013
- Proposal under evaluation for Danish funding of additional nodes



LIVE WEBCAM

HTTP://DEMO.SS1N1.PHYS.AU.DK/WEATHERPAGE/WEBCAMS.PHP

Photo album

Construction of SONG-OT

From 18 October 2010 to date

October 18, 2010
removal of the STARE telescope

October – November 2010: EXCAVATION OF THE SITE AND PREPARATIONS

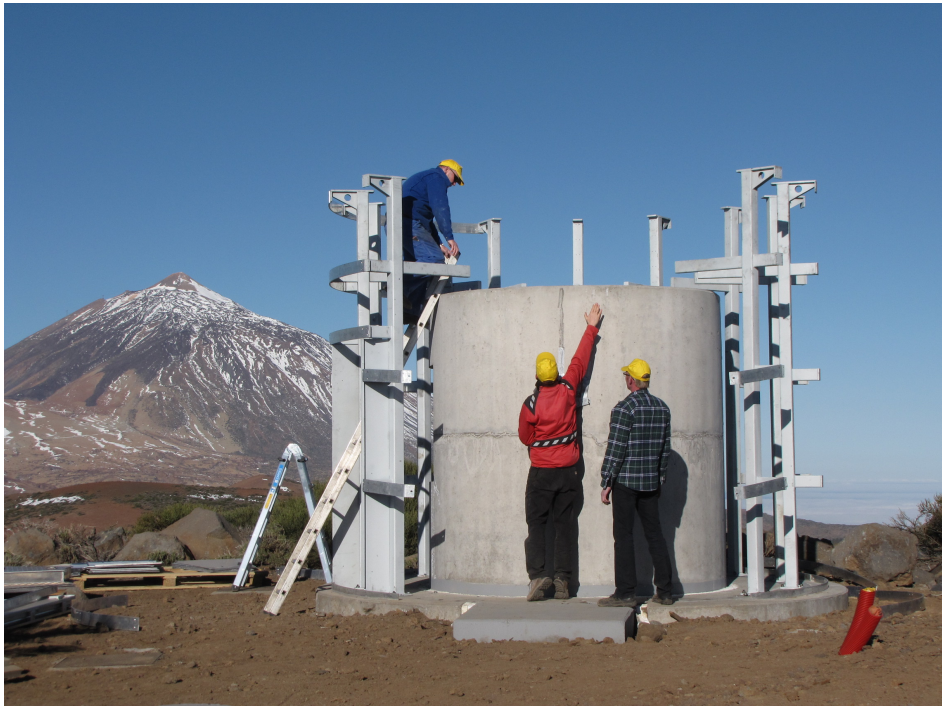
October 26, 2010

November 9, 2010

November 3, 2010

November 2010: Pouring of the concrete pier and placement of the anchor ring

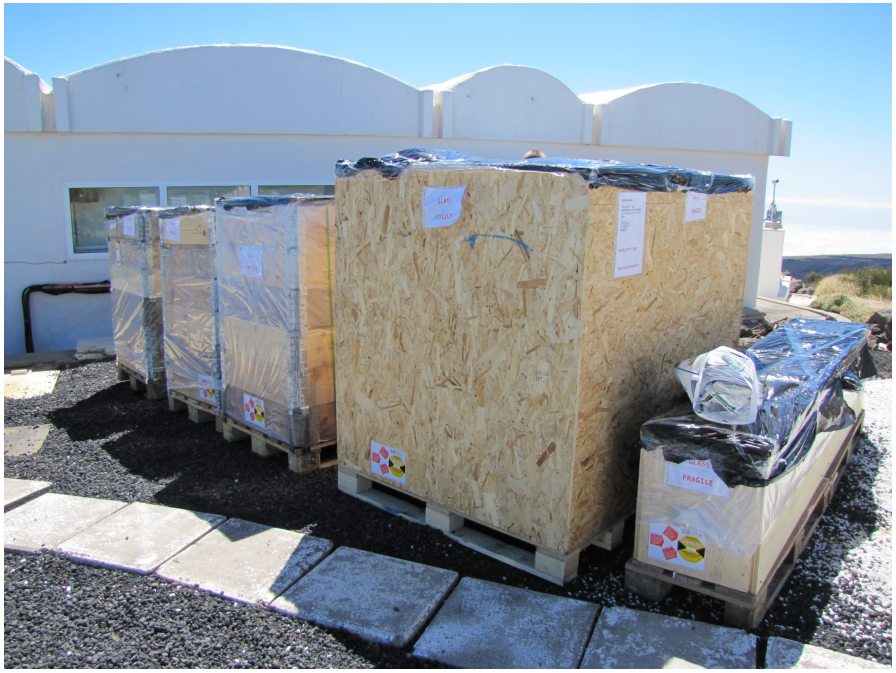
March 2011
INSTALLATION OF THE DOME SUPPORT AND CONTAINER



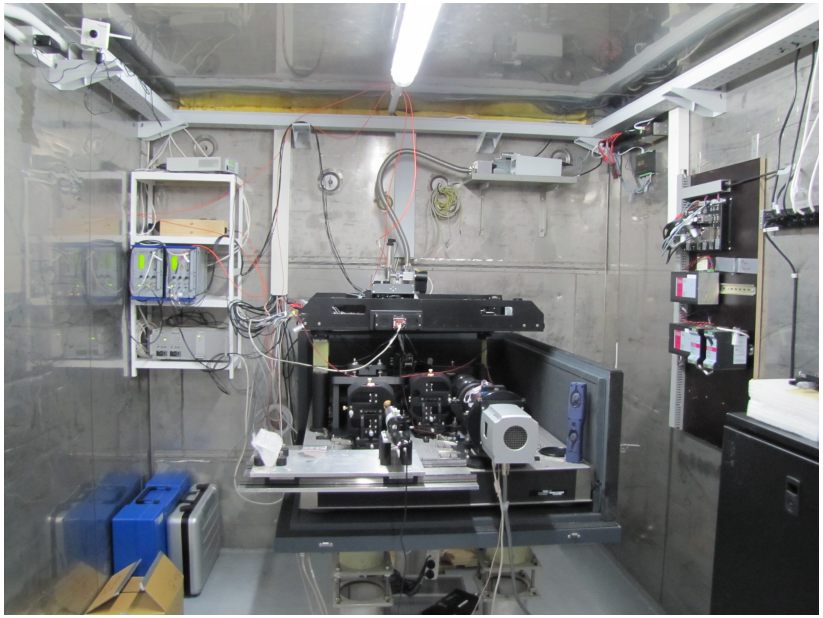
March 28, 2011

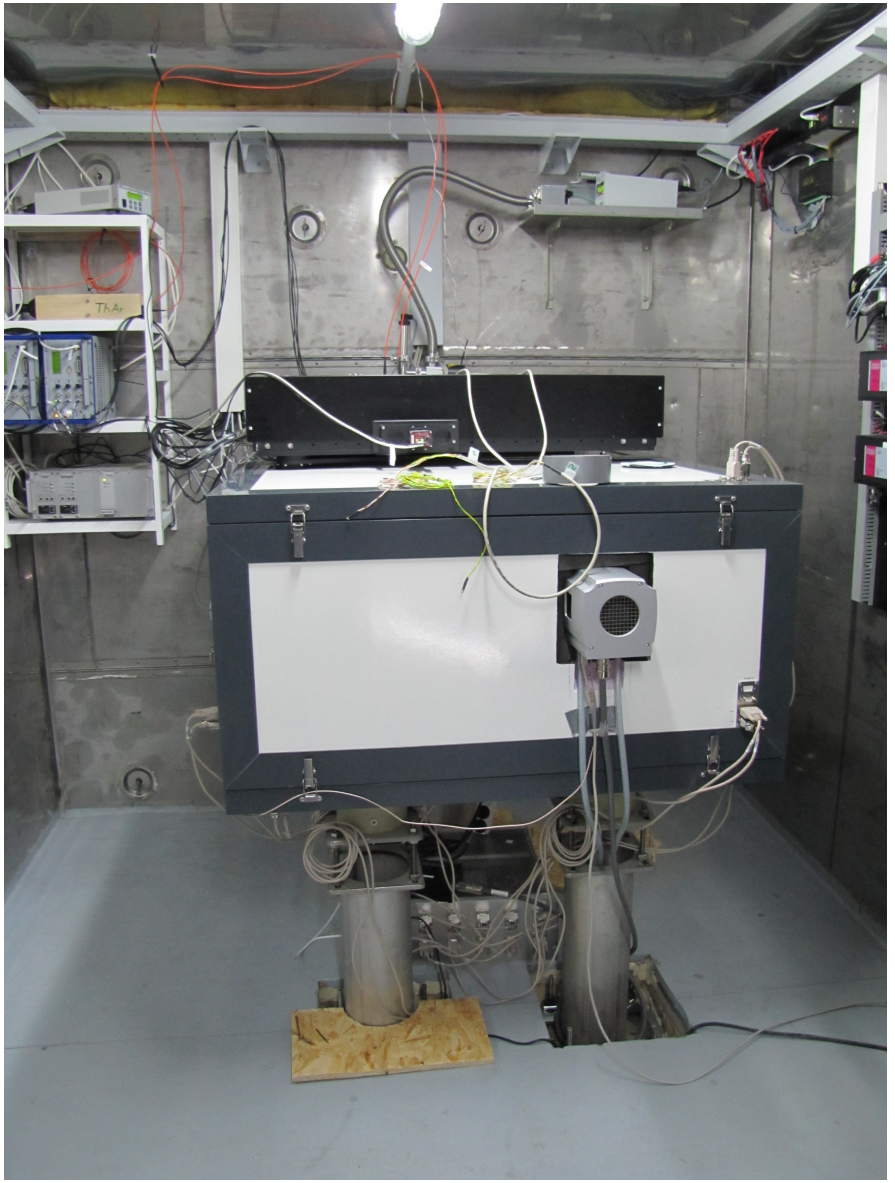
INSTALLATION OF THE SIDE PORTS, SEPTEMBER 3, 2011

March 2012: installation of the spectrograph



March 13, 2012





March 26, 2012

April 2012: installation of dome and telescope

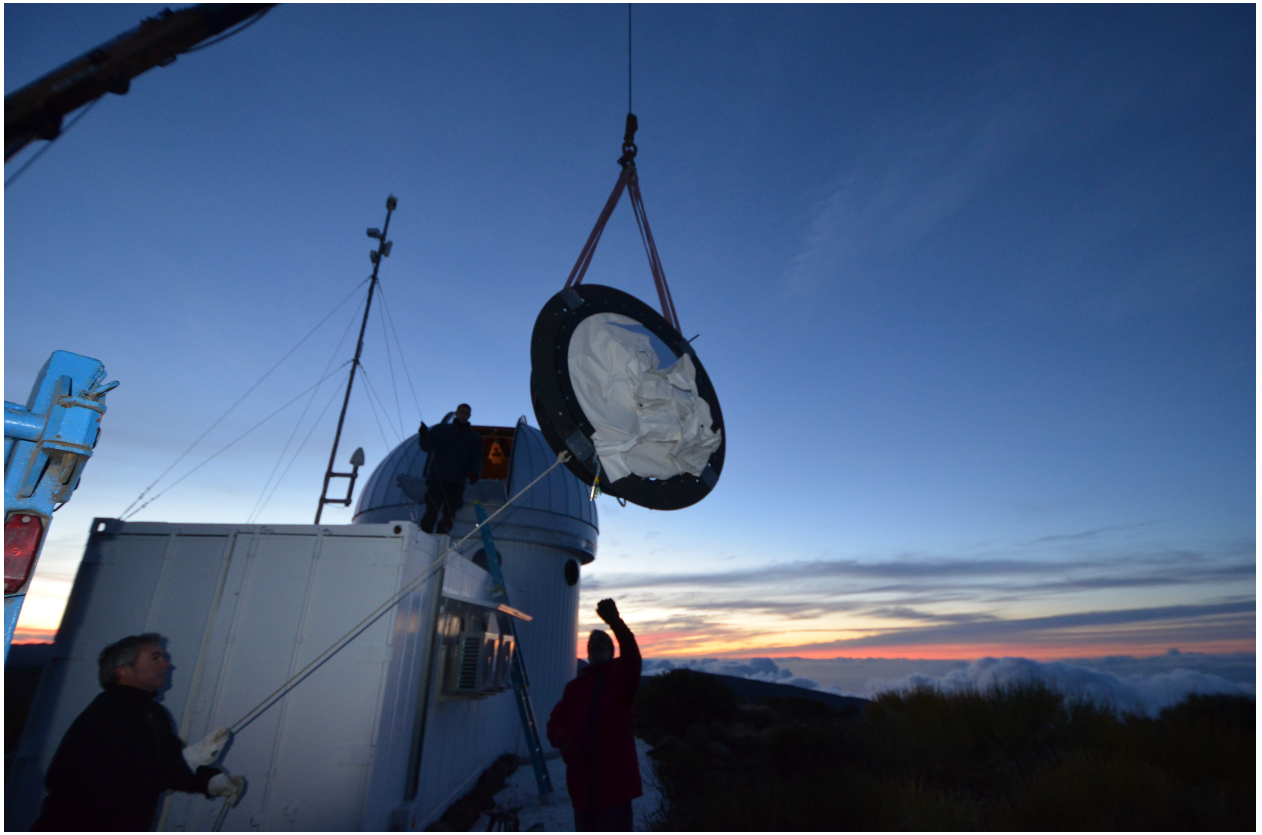
April 18, 2012

April 23, 2012

The 'Champ'!

April 23, 2012

January 21, 2013:
Re-installation of M1



We are looking forward to first light!