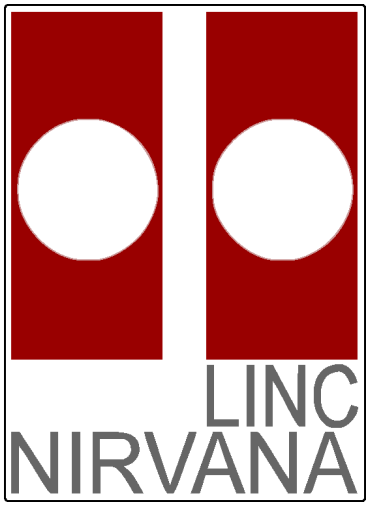
LINC-NIRVANA

The **L**BT **IN**terferometric **C**amera and
Near-Infra**R**ed / **V**isible **A**daptive
i**N**terferometer for **A**stronomy

A collaborative project of the MPIA Heidelberg, INAF Italy,
Universität zu Köln, and MPIfR Bonn
http://www.mpia.de/LINC



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Commissioning-6 Plans

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Short Title	Com-6 Plans
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Prepared	Tom Herbst	dd month yyyy	
	Name	Date	Signature
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	Name	Date	Signature
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Change Record

Issue	Date	Sect.	Reason/Initiation/Documents/Remarks
0.1	20.9.18	all	New doc based on Com-5 doc
0.15	30.10.18	all	Updated logistics and activities

Contents

List of Figures

List of Tables

1 Overview

This document summarizes activities planned for Com-6. It also represents a re-organization of these documents for clarity and brevity.

2 Dates and Logistics

The run is scheduled for **9 half-nights during 12-20 November 2018**.

We have the **second half for 12 and 13 November** and the **first half for 14-20 November**

2.1 Team Membership

Participating from MPIA:

Florian Briegel	- on summit 11-21 November
Tom Herbst	- on summit 11-21 November
Micah Klettke	- on summit 11-21 November
Kalyan Radhakrishnan	- on summit 11-21 November
Fabio Santos	- on summit 11-21 November

Participating from INAF:

Carmelo Arcidiacono	- on summit 11-21 November
Jacopo Farinato	- on summit 11-21 November

Remote from MPIA:

Richard Mathar

2.2 Day-by-Day Events

Fri 9 November

- Florian, Micah, and Tom arrive in Tucson

Sat 10 November

- Fabio and Kalyan arrive in Tucson
- Carmelo and Jacopo arrive in Tucson
- Florian, Micah, and Tom shop for the whole team

Sun 11 November

- Early departure to the mountain for the whole team

Mon-Tue 12-13 November

- LN observing second half-nights

Wed-Tue 14-20 November

- LN observing first half-nights

Wed 21 November

- Group 1 (Florian, Kalyan, Micah) goes directly to airport
- Group 2 (Fabio and Tom) goes to Tucson
- Group 3 (Carmelo and Jacopo) logistics TBC

2.3 Vehicle Logistics

Vehicle 1 (MPG Pilot – Florian)

- to summit Sun 11 November
- to Tucson Wed 21 November afternoon

Vehicle 2 (Rental – NN)

- to summit Sun 11 November
- to TUS airport Wed 21 November morning

Vehicle 3 (Rental –Carmelo? - TBC)

- to summit
- to Tucson

2.4 Current Logistical Uncertainties

We have learned a couple of weeks before the run that the engineering nights that we share will be ARGOS. This may impact availability and planning for the MPG Pilot as well as bedrooms.

3 Pre-Run Activities

- Test fast-link / ICE interface (check for SOUL incompatibilities)
- Continue work on SE search and center
- Work on binning generic loop service
- Work on new WFS GUI
- Training Fabio on instrument operation
- Wake LN from hibernate mode

4 Daytime Activities

- GWS acquisition tests (RR on SX)
- If LBTO ready, calibrate DX, else verify Pathfinder reconstructor (RR on DX)
- Binning 4 calibration for GWS-SX
- SX binning 4 calibration for HWS-SX
- Test phase diversity calibration procedure for NCPA
- Locate f/15 “flashlights” and try new GWS bracket
- Measure new detector rotation hot-spot
- Coordinate with LBTO on a safer way to store the RR fiber
- Hibernate LN in coordination with LBTO at end of run

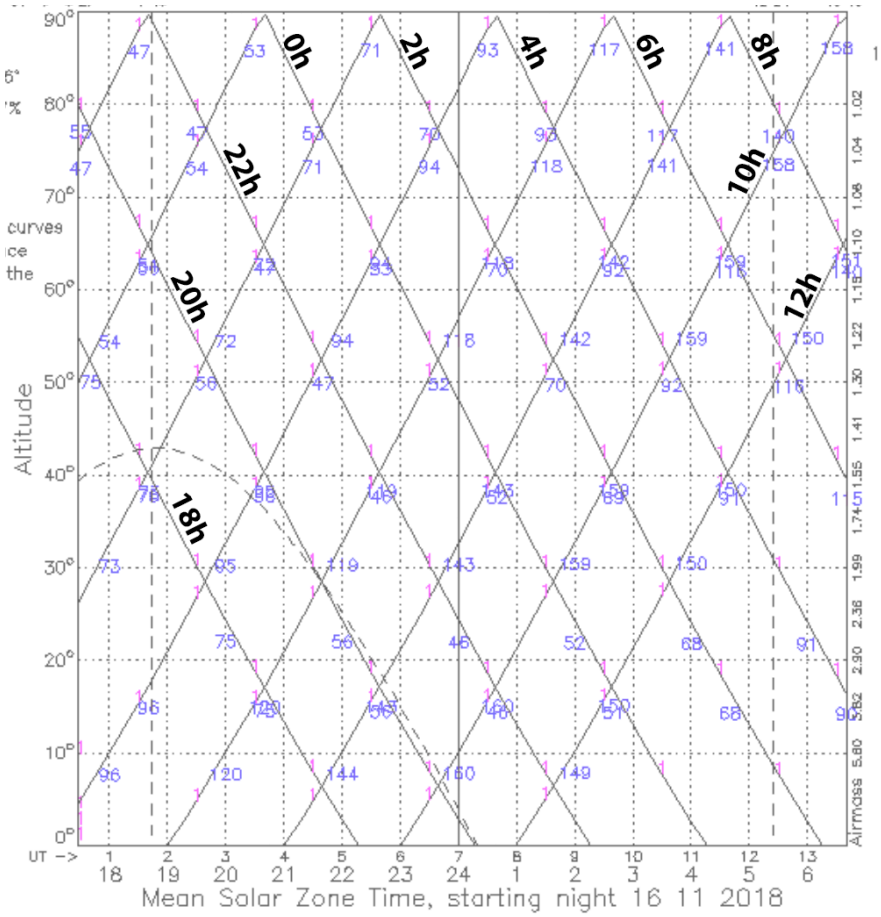
5 Nighttime Activities

We will continue commissioning activities, with a focus on improved acquisition efficiency, fainter guide stars, and acquiring a suitable "first-light" image.

We have **nine half nights** (12 – 20 November). As of 28 October, the plan is to observe the **second half of 12 and 13 November and the first half of 14-20 November**.

5.1 Right Ascension Availability

The figure below displays target availability during Com-6.



Object visibility for the November run.

5.2 Telescope Access Hours

Sunset at	17:18
Sunrise at	6:51
Daytime Access	7:51 – 15:48 or **8 hours per day**
Nighttime handover at	00:05

Based on https://www.esrl.noaa.gov/gmd/grad/solcalc/ and standard LBT practice. Note that we assume handover 1.5 hours before sunset, since we will be handing over to ourselves for 14-20 November. The handover time includes half of the 10-minute overhead.

6 Requirements on LBTO

6.1 Daytime Activities

Item	Support Needed	Date(s)
GWS acquisition tests	Requires RR on SX (1 day + 1 day contingency)	14-20 Oct window
If LBTO ready, calibrate DX, else verify Pathfinder reconstructor	Requires RR on DX (if calibrating, 4 days + 1 contingency, else 1 day + 1 contingency)	14-20 Oct window
GWS-SX binning 4 calibration	Requires RR on SX 4 days + 1 contingency	14-20 Oct window
SX binning 4 calibration for HWS (how about GWS SX?)	Quiet telescope at zenith for 2 days + 1 contingency	12-20 Oct window
Test phase diversity calibration procedure for NCPA	None	
Locate f/15 “flashlights” and try new GWS bracket	Telescope locked at zenith for ca. 2 hours	12-20 Oct window
Measure new detector rotation hot-spot	Telescope locked at zenith for ca. 2 hours	12-20 Oct window
Coordinate with LBTO on a safer way to store the RR fiber	Telescope locked at zenith for ca. 20 min. Discussion with mountain personnel	12-20 Oct window
Hibernate LN after run	Telescope locked at zenith for ca. 20 min. Training of mountain personnel	21 Oct morning

Clearly, the GWS-DX / GWS-SX calibration activities are very time consuming, and may not be completed during this campaign.

6.2 Nighttime Activities

Our nighttime activities have no particular demands on LBTO personnel.

7 Appendix – Packing List for Non-Shipped Items

For a variety of reasons, we will be hand-carrying some items to the observatory and back. The following is a list of these items and their location:

Number	Description	Comment / Location	Where

8 To Do List

This section contains an LN-team internal To Do list of tasks to be completed before Com-6.

8.1 Logistics

• verify room reservations (each traveler should check)
• verify Pilot availability
• rent 4x4 vehicles (as needed)

8.2 Miscellaneous

• screen and select commissioning target fields – (Tom)
• screen and select PR target fields – (Tom)

9 Important Info

This section contains a mish-mash of important information, gathered in one place. Some of it comes from Carmelo's PC-1 notes (PC1_Notes_Carmelo.pdf).

LN Account on obs3

User lneng Pwd 1amLN$eng

IP Addresses of LN Machines

ln-x1.linc (192.168.156.231)
ln-x2.linc (192.168.156.232)
ln-x3.linc (192.168.156.233)
laos.linc (192.168.156.42)

Patrol Camera Hot Pixels (from Carmelo's PC-1 notes)

- Reference pixel on axis Patrol Camera SX: 485,421.
- Reference pixel on axis Patrol Camera DX: 488,414. (NOW 487, 415)

LN Web Cam Addresses

9.1 LN Angle Definitions and Info

Note: Much of this is extracted from the document LN_Angles.

GWS Bearing Angle Directions

When looking at the face of the GWS (from the annular mirror), the bearings rotate as follows (Rosalie's notes from PC-2).:

SX rotates counterclockwise with increasing bearing angle
DX rotates clockwise with increasing bearing angle

DX GWS Bearing "Zero Offset Angle"

Based on the measurements during E2 (see comment section of cat2mm_E2.py), the DX GWS bearing "Zero Offset Angle" zAng is **2.38°**. This was measured by doing "pure" E-W-N-S offsets in Parallactic mode to SE 1,4,7,10. At the time, we called zAng the "magic angle," but we now use the more precise term "zero offset angle." We need to repeat this measurement using AdSec El/Az offsets during Com-2.

Transformation between Slit and Input Coordinates

For SX, flip the vector up-down and then rotate clockwise by 71.5°
For DX, flip the vector up-down and then rotate counter-clockwise by 71.5°