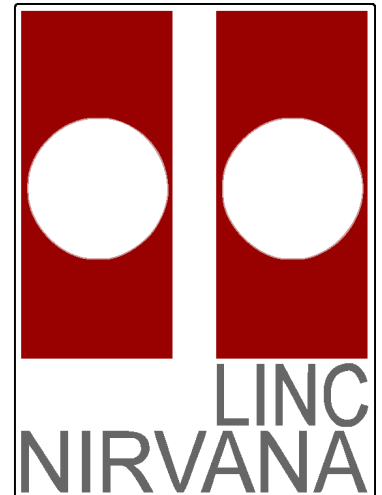


LINC-NIRVANA

The **L**BT **I**nterferometric **C**amera and
Near-**I**nfra**R**ed / **V**isible **A**daptive
interferometer for **A**stronomy

A collaborative project of the MPIA Heidelberg, INAF Italy,
Universität zu Köln, and MPIfR Bonn

<http://www.mpia.de/LINC>



LINC-NIRVANA

-

Commissioning-10 Plans

Doc. No.	LN-MPIA-TN-AIT-XXX
Short Title	Com-10 Plans
Issue	0.1
Date	30 Jan 2020

Prepared	Tom Herbst	dd month yyyy
	Name	Date	Signature
Approved	N. Surname	dd month yyyy
	Name	Date	Signature
Released	N. Surname	dd month yyyy
	Name	Date	Signature

Change Record

Issue	Date	Sect.	Reason/Initiation/Documents/Remarks
0.1	29.1.2020	all	New doc based on Com-9 doc

Contents

1	Overview	1
2	Dates and Logistics	1
2.1	Team Membership	1
2.2	Day-by-Day Events	1
2.3	Vehicle Logistics	2
2.4	Current Logistical Uncertainties	2
3	Pre-Run Activities	2
4	Daytime Activities	2
5	Nighttime Activities	3
5.1	Right Ascension Availability	3
5.2	Telescope Access Hours	3
6	Requirements on LBTO	4
6.1	Daytime Activities	4
6.2	Nighttime Activities	4
7	Appendix – Packing List for Non-Shipped Items	5
8	To Do List	6
8.1	Logistics	6
8.2	Miscellaneous	6
9	Important Info	7
9.1	LN Angle Definitions and Info	7

List of Figures

List of Tables

1 Overview

This document summarizes activities planned for Com-10. We have 3.5 nights: 10-12 February 2020 (3 full nights) and 13 February 2020 (first half-night). The half night will be shared with LBT engineering.

2 Dates and Logistics

2.1 Team Membership

Participating from MPIA:

Thomas Bertram	- on summit 9-14 February
Florian Briegel	- on summit 8-14 February
Tom Herbst	- on summit 8-14 February
Fabio Santos	- on summit 9-14 February

Participating from INAF:

Carmelo Arcidiacono	- on summit 9-14 February
Kalyan Radhakrishnan	- on summit 9-14 February

Remote from MPIA:

Richard Mathar (on call)

2.2 Day-by-Day Events

Wed 5 February

- Tom arrives in Tucson

Fri 7 February

- Florian arrives in Tucson

Sat 8 February

- Florian and Tom do group shopping and drive to summit
- Fabio, Thomas, Kalyan, and Carmelo arrive in Tucson
- Tom and Florian start the cooler

Sun 9 February

- Florian and Tom continue summit preparations
- Fabio, Thomas, Kalyan, and Carmelo do personal shopping and drive to summit

Mon 10 February – Thu 13 February

- Com-10 Observing

Fri 14 February

- Com-10 daytime activities
- After handover, the Com-10 team leaves the summit ()

Sat 15 February

- Com-10 team (except Florian) flies back to Europe

Sun 16 February

- Florian flies back to Europe

2.3 Vehicle Logistics

Vehicle 1 (MPG Pilot – Tom)

- to summit 9 February with Tom and Florian
- to Tucson 14 February with TBD

Vehicle 2 (Rental – Thomas)

- to summit 9 February with Thomas, Fabio, Carmelo, and Kalyan
- to Tucson 14 February with TBD

2.4 Current Logistical Uncertainties

- **As of 31 January, we have not yet received confirmation that our half-night will be the first half of 13 February (allowing us a full day of work on the 14th). We are still scheduled for the first half of 10 February.**

3 Pre-Run Activities

- Test Input/Output modules for cooler PLC (with James Riedl)
- Test emergency shut-down relay for cooler (with James Riedl)
- Cool down LN
- Test fast-link / ICE interface

4 Daytime Activities

Since we have full nights, we plan no daytime activities for 10-13 February. On 14 February, we plan to work on the DX GWS reconstructor issue. During previous runs, we had difficulty getting the loop to close with both Pathfinder and synthetic reconstructors. The Pathfinder ones worked in the past, so it seems that something has changed.

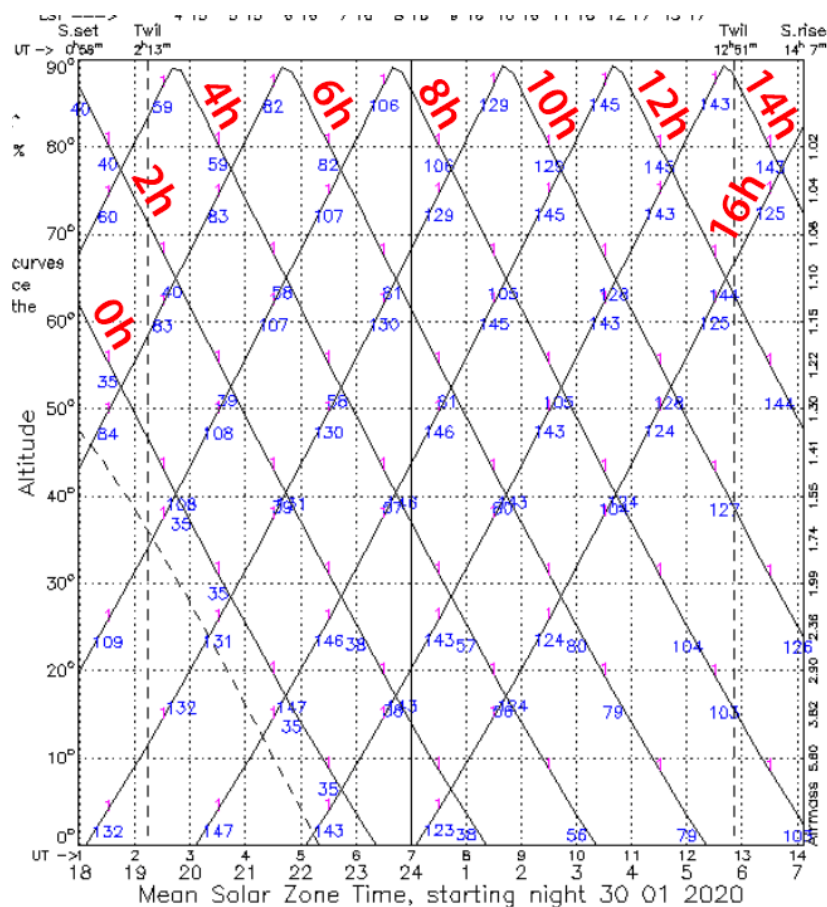
This will require the (modified) retro-reflector on DX. We will probably also do parallel work with either the SX or DX HWS.

5 Nighttime Activities

We will continue commissioning activities, with a focus on improved acquisition efficiency, fainter guide stars, and testing the new GWS-offload routines.

5.1 Right Ascension Availability

The figure below (built from the output of <http://catserver.ing.iac.es/staralt/>) displays target availability during Com-10. Practically, this means objects with RA between 02h and 16h.



Object visibility for the February 2020 Com-10 run.

5.2 Telescope Access Hours

- Sunset at 18:01
- Sunrise at 07:07
- Observing hours *ca.* 11.5 (45 min after/before sunset/sunrise)
- Daytime Access 8:10 – 16:00 or **7.8 hours**
- Nighttime handover at 00:28

Based on <https://www.esrl.noaa.gov/gmd/grad/solcalc/> and standard LBT practice. The handover time includes half of the 10-minute overhead. Note that the latitude/longitude of LBT is 32.7011,-109.8892

6 Requirements on LBTO

6.1 Daytime Activities

Item	Support Needed	Date(s)
Reconfigure Barilotto	Access to retroreflector	13 February
GWS DX work	Quiet telescope on oil. Dim dome.	14 February
Coordinate with LBTO on a safer way to store the RR fibers	Telescope locked at zenith for ca. 20 min. Discussion with mountain personnel	anytime

6.2 Nighttime Activities

Our nighttime activities have no particular demands on LBTO personnel.

8 To Do List

This section contains an LN-team internal To Do list of tasks to be completed before Com-7.

8.1 Logistics

- verify room reservations (each traveler should check)
- verify Pilot availability (Tom) – DONE - reserved
- rent 4x4 vehicles (Thomas) – DONE

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 lamLN\$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

GWS Bearing "Zero Offset Angles"

Com-1 – March 22, 2017 Blog:

"Kalyan, Luca, Rosalie, and Tom measured the SX GWS "zero-angle offset". This is the amount by which the bearing must be rotated to be "square" with the bench. They made the measurement by applying precise coma-free pointing offsets to M2 and locating the spots with star enlargers. They made two measurements. The first gave an offset of $+1.27^\circ$ and the second one $+1.34^\circ$."

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°