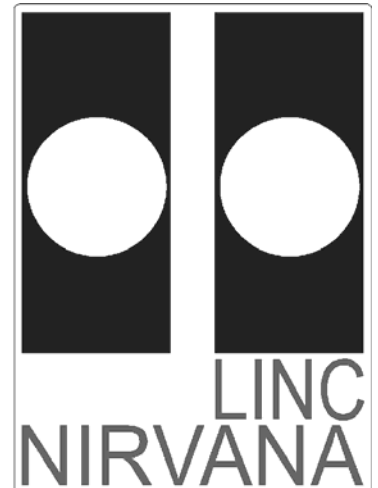


LINC-NIRVANA

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-Arcetri,
Universität zu Köln, and MPIfR Bonn

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LINC-NIRVANA

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Temperature Test on the Dichroic Wheel

Doc. No. LN-MPIA-TN-CRYO-005
Short Title Cool Down
Issue 0.1
Date 18 March 2005

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Approved		dd month. yyy	
	Name	Date	Signature
Released		dd month. yyy	
	Name	Date	Signature

Document Change Record

Issue	Date	Section/ Paragraph Affected	Reasons / Remarks
0.1	18 March 2005	All	new document

TABLE OF CONTENTS

1	Scope	4
2	Applicable documents	4
3	Acronyms and abbreviations	4
4	Introduction	4
5	Settings	4
6	Method of Measurement	5

LIST OF TABLES

Table 1. Motor’s settings used during the test.....	4
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LIST OF FIGURES

Figure 1. Actuator and Dichroic Wheel – Front View	5
Figure 2. Actuator and Dichroic Wheel – Back View	6
Figure 3. Cool down with thermal contact.....	7
Figure 4. Cool down without thermal contact.....	7

1 Scope

This document describes and presents the results of the test made to determine the influence of the actuator (cold finger for thermal contact) on the cool down process of the Dichroic Wheel.

2 Applicable documents

No.	Title	Number & Issue

3 Acronyms and abbreviations

4 Introduction

The Dichroic Wheel is a very important part of LINC-NIRVANA. It is responsible for the wavelength band selection for science observation and fringe tracking. For this reason it is important to determine the time needed for it to cool down, and if using the cold finger (actuator) improves this timing.

5 Settings

The followings table shows the most important motor's settings used for the test:

Table 1. Motor's settings used during the test

Profile:	2
Velocity:	9000
Start Velocity:	0
Acceleration:	1400
Microsteps:	8
Steps per Motor Turn:	200
Motor Ratio:	1
Setting Structure:	0x5000
Current:	1,17A

* Actuator moved in cold (inside Dewar ~ 77K)

6 Method of Measurement

The procedure consisted in cooling down the dichroic wheel with the thermal contact, then warming it up, and then cool it down again without the thermal contact. In order to monitor the cool down process, a series of temperature sensors were placed in strategic positions of the dichroic wheel.

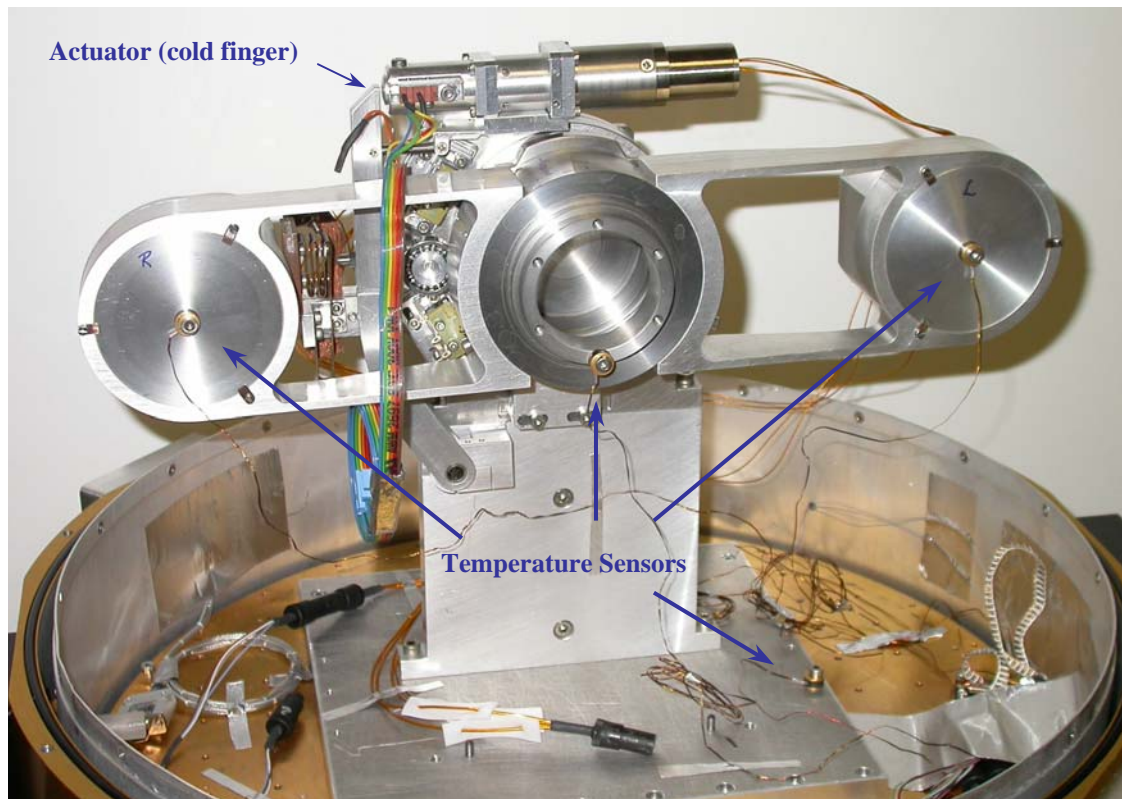


Figure 1. Actuator and Dichroic Wheel – Front View

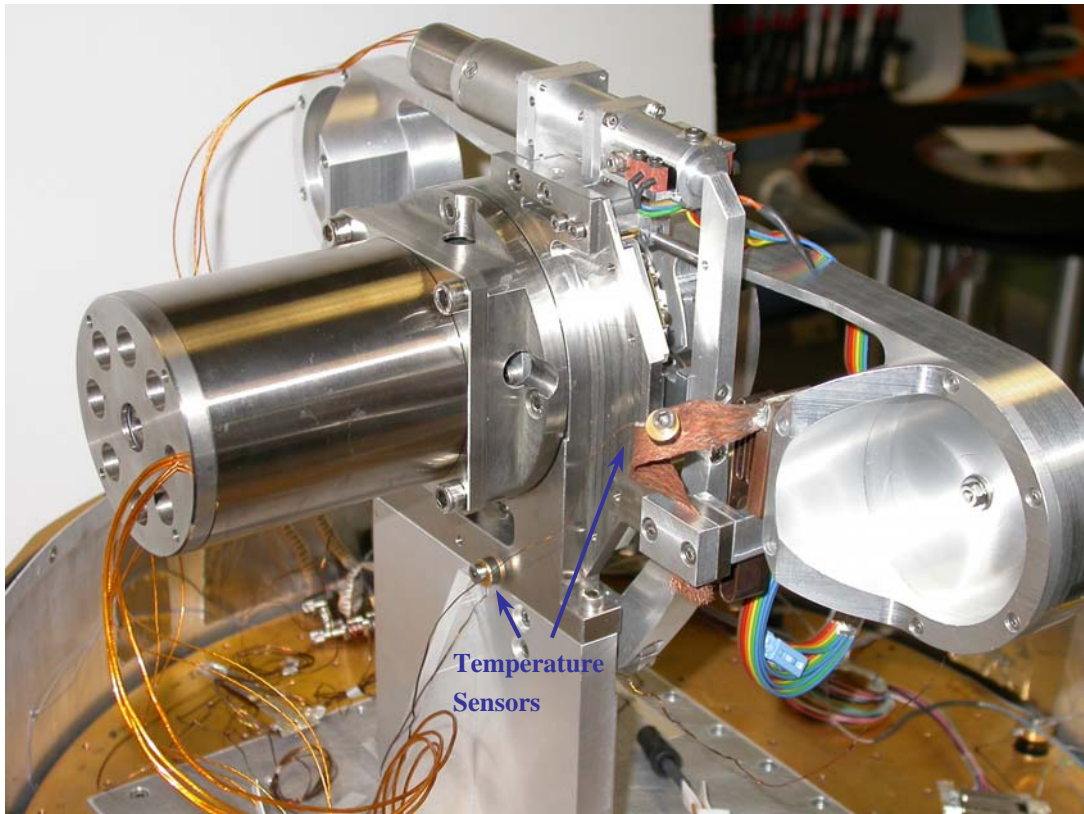


Figure 2. Actuator and Dichroic Wheel – Back View

The results below show that the dichroic wheel reaches its coldest state after approximately 24h. The thermal contact accelerates the cool down process, however only in about 1 hour. This all points to the fact that for the final design the actuator may not be necessary at all.

LINC-NIRVANA: Actuator out (thermal contact) - Cool down

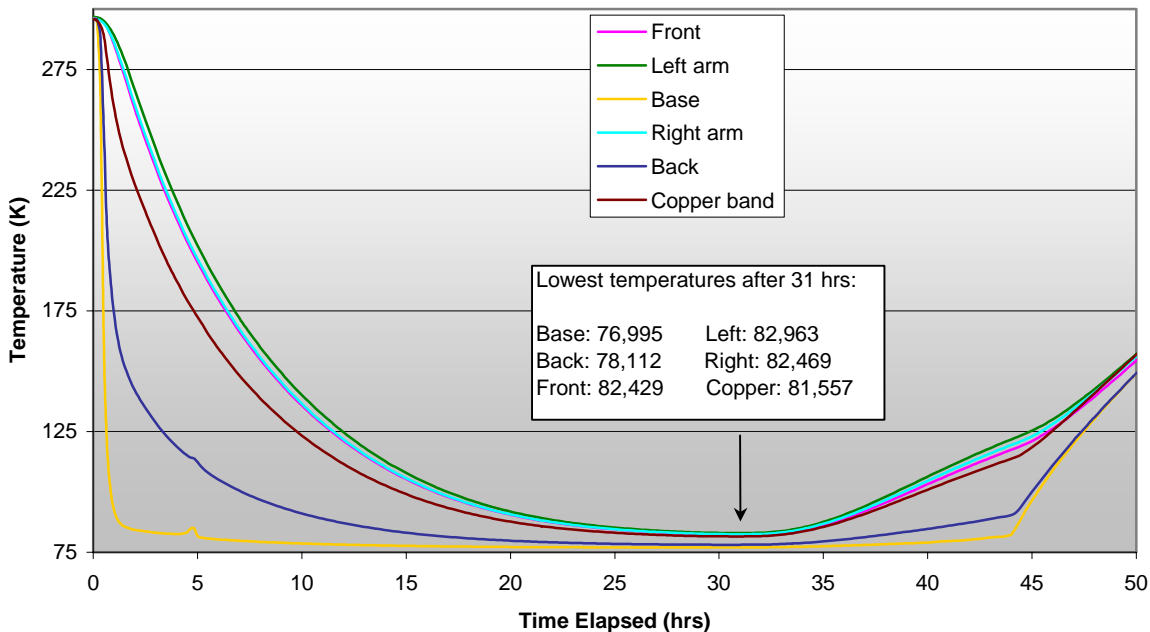


Figure 3. Cool down with thermal contact

LINC-NIRVANA: Actuator in (no thermal contact) - Cool down

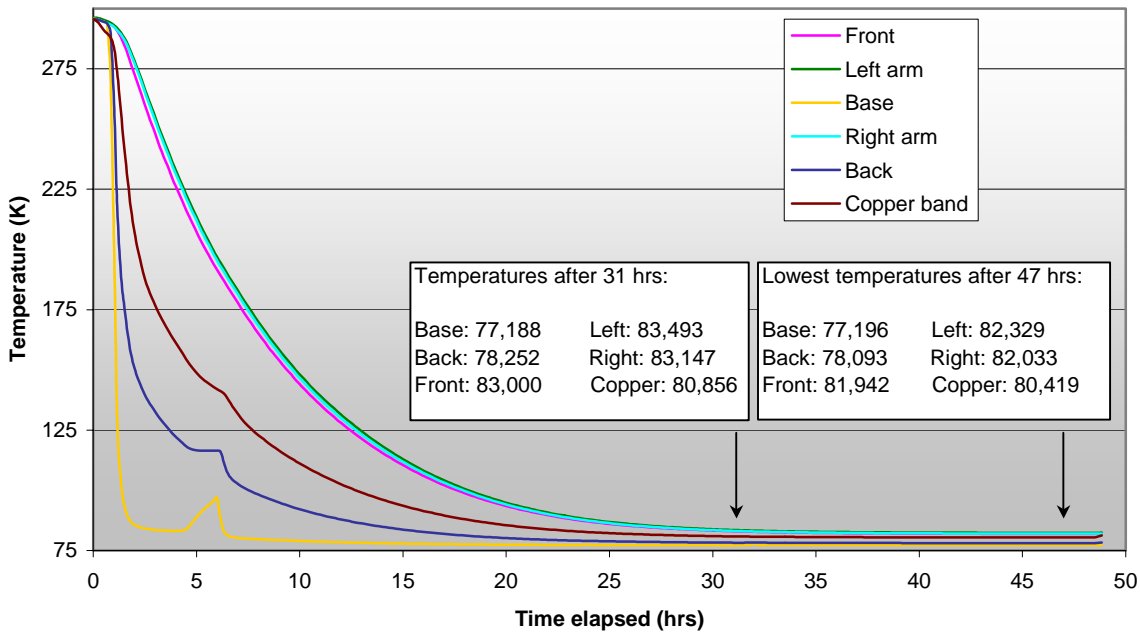


Figure 4. Cool down without thermal contact