

**MEMORANDUM OF UNDERSTANDING BETWEEN THE
NATIONAL RADIO ASTRONOMY OBSERVATORY
AND THE
CHANDRA X-RAY OBSERVATORY**

1. Purpose

In recognition of the importance of radio observations using National Radio Astronomy Observatory (NRAO) facilities for scientific exploration by the Chandra X-ray Observatory, and of X-ray observations by Chandra to scientific programs conducted on NRAO facilities, this agreement establishes a reciprocal and cooperative arrangement in which observing time on NRAO telescopes and on Chandra is made for joint observations on a competitive basis. The scientific programs that will be supported by this agreement are those that are enhanced by the combination of Chandra observations with investigations using the radio facilities operated by the NRAO. The intent, in keeping with the missions of both Chandra and the NRAO, is to maximize data availability and scientific return for the entire user community.

2. What this Agreement Covers

The present agreement covers joint observing programs using both the Chandra X-ray Observatory and NRAO's GBT, VLBA, and VLA, with the potential of adding ALMA at a future date.

A description of the process and policies applying to Joint Partner Observatories (JPOs) and details specific to NRAO are described in detail in the Chandra Call for Proposals, Sec 4.5 at

<http://cxc.harvard.edu/proposer/CfP>.

All the relevant text will continue to be provided in a timely manner to NRAO for review and approval prior to the annual release of the Chandra CfP. Reciprocally, NRAO will allow for timely review of the NRAO CfP by the Chandra X-ray Center (CXC).

This agreement provides further details that the CXC and NRAO deem inappropriate for CfPs and their intended audience of proposers.

3. Joint Proposals Opportunity: Access to NRAO Telescopes via Chandra

By this agreement, NRAO permits the Chandra GO Program to award NRAO

observing time. The amount and/or fraction of such time is described in the Chandra CfP, by agreement with NRAO.

All NRAO time awarded by the Chandra GO Program will undergo review for technical feasibility by NRAO as described in the CfP.

No NRAO time will be awarded by the CXC without the award of Chandra time.

The allocation of time by Chandra on the Atacama Large Millimeter/Submillimeter Array (ALMA) is not yet covered by this agreement.

4. *Joint Proposals Opportunity: Access to Chandra via NRAO*

By this agreement, the Chandra Program permits NRAO to award Chandra observing time. The amount and/or fraction of such time is described in the NRAO CfP, by agreement with Chandra.

All Chandra time awarded by NRAO will undergo review for technical feasibility by the CXC as described in the CfP.

No Chandra time will be awarded by NRAO without the award of NRAO time.

5. *Funding Available for Observers*

The CXC will make funding available to successful U.S.-based investigators who are awarded Chandra observing time through the Chandra GO process.

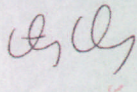
NRAO makes no funding available to investigators who request Chandra time through the Chandra GO process.

6. *Effective Date, Term, Termination, and Amendments*

This agreement shall begin on day 1 Dec 2014 or upon the date of its signing by both Parties, whichever is later, and will thereafter be subject to renewal by mutual agreement annually.

This agreement may be suspended by mutual agreement of the signatories in the event of a major equipment failure on the Chandra spacecraft or in the case of a major event that renders NRAO infrastructure incapable of supporting operations of the VLA, VLBA, or GBT for an extended period of time.

This agreement may be amended, subject to the written agreement of both signatories or their designated representatives.

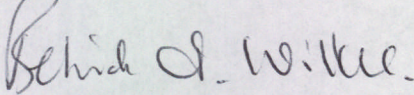


Digitally signed by Tony Beasley
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Date: 2014.11.07 11:25:52 -0500

Dr. Anthony Beasley, Director

Date

NRAO



Dr. Belinda Wilkes, Director, Chandra X-ray Center

Date

SAO