

# MMA Newsletter

January 1999

Project Status

## Project Status

Resolution of a  
Common  
Antenna  
Diameter for  
the U.S.-  
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1. With Presidential approval, Congress appropriated the second year funding for the 3-year MMA Design and Development project. These funds are being transferred from the NSF to AUI. In 1999 the major contract of the MMA D&D phase, procurement of the prototype antenna, will be placed and this will involve expenditure of a substantial fraction of the 1999 funds.

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2. The activities planned for the D&D work in 1999 and years after are described in detail in the MMA Project Book at [http://www.tuc.nrao.edu/~demerson/project\\_book](http://www.tuc.nrao.edu/~demerson/project_book). This is the fundamental reference for the project; it can be accessed on-line from the MMA web pages. The Project Book is useful to the MMA staff because it shows how each major task interacts with other tasks both technically and in time. The Project Book will also be of interest to those outside the project because it is a complete description of what is, and what is not, planned as part of the MMA. The MMA System Engineer, Darrel Emerson, is the editor of the Project Book. He keeps two electronic versions of the Project Book on-line at any time: both the current version and the version that incorporates recent changes and updates. This system is analogous to the AIPS "new" and "test" versions and is a very helpful way to handle "living" documents.

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The first comprehensive revision of the Project Book was completed in November. From that time forward the project is being "controlled" according to the task and schedule information presented in the Project Book. Simply, this means that it is now the responsibility of the project management to assure that the scope of the project (i.e. the tasks planned), the schedule of task milestones and deliverables, and the budget allocated to each task is maintained. All proposed changes to the scope, schedule or budget of any task can be adopted only through a process that involves agreement by the project Division Heads and senior management so that the entire project can be knowingly paced.

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# Resolution of a Common Antenna Diameter for the U.S.-European Collaboration

Over the past few months it has become clear that the desires of both the U.S. community and the European community to realize a merger of the MMA with the Large Southern Array (LSA) were increasingly likely to be successful. An initial meeting of science ministry officials from the U.S., Europe and the UK further reinforced these goals of the respective science communities.

The intent of the merger is to achieve a 50/50 partnership in an array twice as large as the MMA alone (and 4 times more capable by some measures). This is to be a homogeneous array. The scientific scope of the joint instrument encompasses everything that has been a goal for the MMA: that is, the array is to be a complete imaging instrument. However, a larger project allows a greater fraction of the total project cost to be spent on antennas, and in this sense it provides an opportunity to increase significantly the collecting area of the array beyond that planned for the MMA alone. A further increase can be made if the antennas are each of a diameter larger than had been planned for the MMA. The limit is reached when it becomes no longer possible to build an antenna that meets the specifications needed for wide-field mosaic mapping; the pointing spec is the most demanding. A year ago the joint US-European antenna working group concluded this diameter was in the range 10-12 meters.

In November an ad hoc group of scientists representing the MAC, the MDC universities and the MMA project met in Berkeley to consider how the choice of an antenna diameter in the range 8-12 meters would affect the scientific performance of the combined US-European array. The report of this committee will be available as MMA Memo 243.

It concludes that over the range of diameter 10-12 meters there is no significant compromise to the science so long as the antenna meets the MMA specs, most importantly the pointing as a function of primary beam size (this means more precise pointing for the larger antenna). A draft of MMA Memo 243 was given to the MAC at their November 21, 1998 meeting. As noted below the MAC affirmed the conclusions of that report and recommended that agreement with the Europeans be obtained as soon as possible.

In December the NSF MMA Oversight Committee reviewed this issue from the perspective that such a negotiation would have on the NSF funded MMA D&D schedule. The recommendation of this group was to avoid any delay to the NSF-funded work. There are two reasons for this recommendation. First a delay would lead to a budget overrun in the D&D work because it would stretch out the antenna procurement process. Second, a delay will prevent the MMA D&D Project from meeting its most visible objective, namely to produce a prototype antenna by June 2001; by law the NSF would have to report to Congress such a major project discrepancy.

It is therefore the decision of the MMA Project management to adopt 12 meters as the diameter of the antenna to be procured as the MMA prototype in 1999. This decision

1. keeps the project on schedule for a June 2001 antenna delivery;
2. reaffirms the commitment of the U.S. community to realize the MMA-LSA merger;
3. gives time for the NSF and AUI to negotiate an acceptable joint project management structure without delaying any of the on-going work in the U.S.;
4. gives antenna manufacturers a chance to demonstrate their capability to deliver a high performance production antenna; and
5. if the antenna manufacturer can indeed meet the specs, it will not compromise the scientific performance of the joint array.

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## European MOU for a Common Array Project

In December a Memorandum of Understanding (MOU) was signed in Europe entitled "European Memorandum of Understanding Concerning the Design and Development of a Large Millimeter and Submillimeter Array".

The signatories are:

1. European Southern Observatory
2. Organizations in the ESO member states that will commit resources to the D&D work in addition to their contributions through ESO, CNRS (France), MPG (Germany), NFRA (Netherlands)
3. PPARC (UK)

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The signatories resolve to:

- a. Pursue until 2001 a coordinated design and development program in conjunction to that being pursued by NRAO;
- b. Negotiate with NSF and NRAO on the development of an international millimeter and submillimeter array project.

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The MOU establishes a European Coordination Committee (ECC) to be responsible for all activities with the representation on the ECC to be proportional to the contributions made. It further provides for a European Project Manager and gives him the responsibility for establishing a European Project Team. Finally, it establishes a European Negotiating Team (ENT) to be responsible for the formal negotiations with NSF and AUI/NRAO.

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The European MOU took effect on January 1, 1999. Dick Kurz has been named European Project Manager. Dick is well known to people in the U.S. as he previously served as Gemini Project Manager. The ENT and NSF/AUI will meet January 20 to begin negotiations.

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## Millimeter Array Advisory Committee

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The MAC met on November 21 in Chicago. The committee report is available at [http://www.mma.nrao.edu/meeings/mac/mac\\_nov98.html](http://www.mma.nrao.edu/meeings/mac/mac_nov98.html).

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## NSF Millimeter Array Advisory Committee

The NSF MMAOC met in Socorro on December 16 and 17. This was the third meeting of the committee in 1998. Their report should be available by the end of January. It will be posted at that time to [http://www.mma.nrao.edu/meetings/nsf/dec\\_98.html](http://www.mma.nrao.edu/meetings/nsf/dec_98.html).

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## Proposed Japanese Collaboration

In November the Japanese astronomers met in the company of many of their science ministers to discuss the scientific and institutional advantages of proposing a merger of the Large Millimeter and Submillimeter Array (LMSA), a project of the National Astronomical Observatory of Japan with the MMA and LSA. The agenda of that meeting is [http://www.mma.nrao.edu/news/jan99/JNCA\\_symposium.html](http://www.mma.nrao.edu/news/jan99/JNCA_symposium.html).

The Japanese scientific community enthusiastically endorsed the proposed merger and recommended to their officials that they meet with the U.S and Europeans to discuss how such a merger could be developed. Initial 3-way meetings are tentatively scheduled for February.

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## Joint U.S.-European Array Science Meeting

A meeting of U.S. and European scientists is being planned for the Fall of 1999 in Washington D.C. The goal of the meeting is to review the scientific program planned for the joint array and how that program interacts with the science goals of other astronomical facilities expected to be operational at the time the MMA begins operation. Meeting details will be distributed as they become available.

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No.	Title	Author(s)	Date
238	Precipitable Water at KP -- 1993-1998	Bryan Butler	11/98
237	Precipitable Water at the VLA -- 1990-1998	Bryan Butler	11/98
236	Suggestions for Revised Definitions of Noise Quantities, Including Quantum Effects	A.R. Kerr	11/98
235	Drawing Numbers and Drawing Archive	V.L. Gasho, J.S. Kingsley, L. D'Addario	11/98
234	Thermal Behavior of the Leighton 10-m Antenna Backing Structure	James W. Lamb, David P. Woody	10/98
233	The design of MMA configurations of intermediate extent	Adrian Webster (Royal Observatory Edinburgh, Scotland)	10/98
232	A Simple Method to Improve Pointing of the MMA Antennas	John B. Lugten	10/98
231	A First Study of MMA Antenna Offset Performance	Torben Andersen (Lund University, Lund Sweden)	10/98

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