

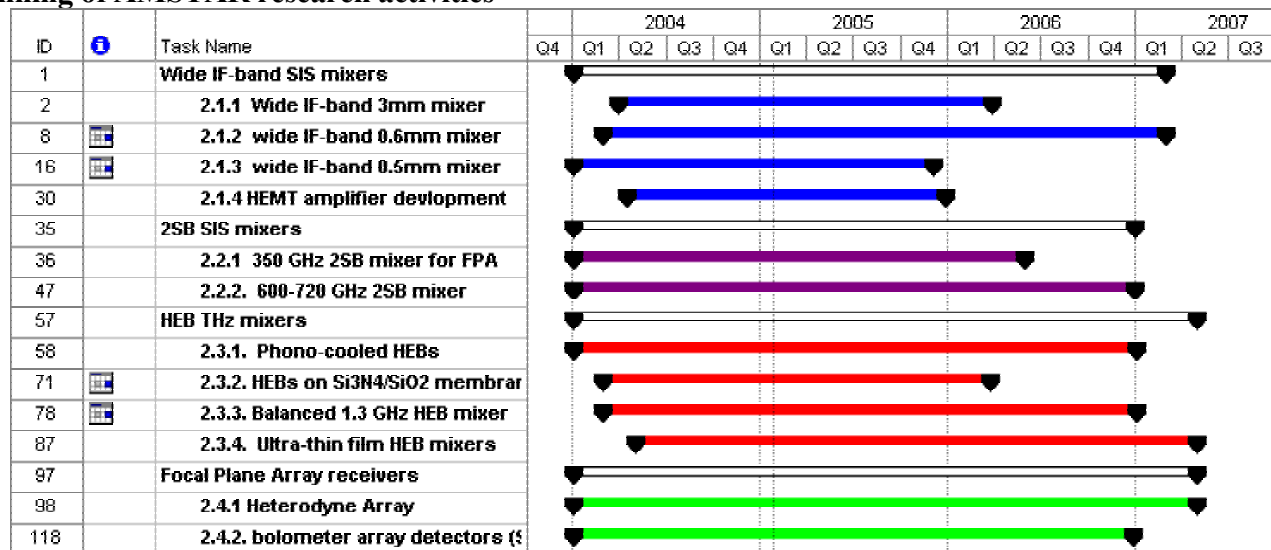
Minutes of the AMSTAR meeting of Dec 10, 2004

The AMSTAR 2004 End of the year meeting was held at the IRAM headquarters in Grenoble.

This meeting was attended by 17 engineers and scientists directly involved in AMSTAR (V. Belitsky and R. Booth from Chalmers, A. Baryshev and W. Wild from SRON, J.R. Gao from TuDelft, B. Ellison from RAL, M. Justen and N. Honingh from KOSMA, J. Baubert and J.M. Krieg from LERMA/Obs de Paris, B. Lazareff, D. Maier, T. Scherer, K. Schuster and M. Guelin (AMSTAR PI) from IRAM), as well as by several IRAM engineers working on related topics. The meeting was also attended by Dr. J-C. Villegier from the CEA (Grenoble).

Most of the meeting was devoted to the presentations of the progress made in the different AMSTAR work packages and to an enlivened discussion of the results. The presentations gave a very encouraging picture of the research activities, despite the fact that several work packages could start only after the arrival of the EU funding (en of April). Because of this delay and because the goals of some work packages have been revised upwards, the calendar of the different AMSTAR work packages is now shifted as shown below.

Planning of AMSTAR research activities



The research activities have progressed fast: all work packages are essentially on time or ahead of schedule. In many cases, prototype mixer devices have been built and tested. These first results, in particular those concerning Hot Electron Bolometer mixers, are very promising.

Year	Quarter	Milestone	Status
	2.1.1	Wide IF-band 80-116 GHz SIS mixer (IRAM)	Started on 01/04/04
1	Q4	2.1.1 Mixer design finished	Achieved
	2.1.2	Wide IF-band 385-500 GHz SIS mixer (Chalmers)	Started on 01/03/05
1	Q3	500 GHz mixer analysis & modelling	Achieved
1	Q3	IF HEMT amplifier analysis and modelling (4-8 GHz)	Achieved
	2.1.3	Wide IF-band 600-720 GHz SIS mixer (SRON/TuD)	Started on 01/01/04
1	Q2	Baseline technology selection	Achieved
1	Q3	Detailed mixer designs	Achieved
1	Q1	NbN barrier junctions	Ongoing, require more development
1	Q2	NbTiN top wiring	Ongoing, require more development
1	Q3	NbTiN top electrode	Ongoing, require more development
1	Q4	NbTiN top top & bottom wiring	Not necessary for this band
	2.1.4	HEMT amplifier design (FG-IGN)	Started on 15/04/04
1	Q3	Design of HEMT amplifier of 4-8 GHz band	Achieved
1	Q4	Setup of cryogenic test measurement system	Ongoing
	2.2.1	350 GHz 2-SB SIS Mixer (KOSMA)	Started on 01/05/04
		RF and IF hybrid development	Achieved
	2.2.2	600-720GHz 2SB mixer (SRON/TuD)	Started on 01/01/04
1	Q2	WG mixer design study	Ready
1	Q4	WG hybrid production study	Ready
1	Q2	QO mixer design study	Ready
1	Q4	Baseline technology selection	Ready
	2.3.1	HEB mixer development (SRON/TuD)	Started on 01/01/04
1	Q2	Quasioptical Antenna design	Ready
1	Q4	Design implementation	Ready
1	Q2	NbN film growth optimization	Ready
1	Q4	NbTiN thin film growth optimization	Ready
	2.3.2	HEBs on Si₃N₄/SiO₂ membranes (OBSPM)	Started on 01/03/04
1	Q4	Design phase	90% achieved
	2.3.3	Balanced HEB mixer (Chalmers)	Started on 01/03/04
1	Q3	1.3 THz mixer analysis & modelling	In progress
1	Q3	MicroMachining Technology Research & Development	In progress
1	Q3	NbN film processing and device fabrication R&D	The first batch fabricated
1	Q3	IF HEMT amplifier analysis and modelling (2-4 GHz without circulator)	Achieved
	2.3.4	Ultra-thin films for HEB mixers (IRAM/MPIfR)	Started on 15/04/04
1	Q4	Film deposition optimisation	50 % done
	2.4.1	Focal plane heterodyne array (IRAM/CCRLC)	Started on 01/04/04
1	Q4	Prototype photomixer design and fabrication	Achieved
	2.4.2	TES and bolometer array (TuD/SRON)	Started on 01/01/04
1	Q2	Design study	Ongoing

Details on the work done in 2004 by the different groups can be found in the copies of the presentations attached to the AMSTAR Wiki pages (<http://www.radionet-eu.org/rnwiki/AmstarMeetings>).

During the discussion, the experience of the different groups on the different ways to realize high frequency hybrid couplers was compared. The last part of the meeting dealt with organisational matters (how to prepare the Annual report) and with an information on the actions decided at RadioNet November Board Meeting. Among those, is a recommendation to seek areas of potential integration between AMSTAR developments and ALMA Front End tasks. It was noted in this respect that 8 of the 10 laboratories involved in AMSTAR are already working for ALMA.

The final part of the meeting was devoted to practical instructions on how to write the AMSTAR 2004 Annual Report.