Minutes of the AMSTAR meeting of June 29th-30th, 2005

The AMSTAR 2005 mid-year progress meeting was held at SRON (Groningen).

Were present: V. Belitsky from Chalmers, J.R. Gao from TuDelft, J.D. Gallego form OAN, N. Honingh and T. Tils from KOSMA, J. Baubert and J.M. Krieg from LERMA/Obs de Paris, B. Lazareff, D. Maier, T. Scherer, K. and M. Guélin from IRAM, and by A. Baryshev, P. Mena and W. Wild from SRON. The meeting was also attended by several SRON engineers and scientists working on related topics.

Agenda

Wednesday June 29th

1. **Welcome** *14h30-14h45*

2.1 **Progress report on the Work packages: Results& Prospects I** *14h45-18h35*
(Duration of each talk: 15 min + 5 min discussion)

a. Wide-band SIS mixer development (4 talks: D. Maier, V.Belitsky, A. Baryshev, J.D. Gallego) → *16h05*
b. 2SB SIS mixer development (2 talks: *N. Honingh*, P. Mena) →*16h45*

coffee break 16h45-17h15

c. HEB mixer development (4 talks: J.R. Gao, J.M. Krieg, V. Belitsky, T.Scherer)→*18h35*

Joint dinner

Thursday June 30th

2.2 Progress report on the Work packages: Results& Prospects II *8h30-9h15*
(First talk: 20 min + 5 min discussion; second talk: 15 min+5 min discussion)

d. FPA receivers and detectors (2 talks: B.Lazareff, J.R. Gao)

2.3 General Discussion *9h15-10h00*

3.1 Report on the RadioNet Meeting in Paris (Guelin**)** *10h00-10h30*

coffee break 10h30-10h45

3.2 Organisational questions; perspectives: *10h45-11h30* – Format for Progress reports- financial questions- FP7-AOB

4. **Visit of the SRON Laboratories** *11h30-12h30*

End of Meeting - Lunch (12h30-13h30)

Most of the meeting was devoted to a presentation of the work made in the different AMSTAR workpackages and to a discussion of the results. Among the newest results we note:

- HEMTs amplifiers (OAN): First results obtained on a prototype amplifier covering the 4-12 GHz band. A noise temperature as low as 6 K and a gain of 32 dB were achieved after extensive tuning. This prototype comes in addition to the 2 low-noise InP HEMT amplifiers built for the 4-8 GHz band.
- 345 GHz 9-element SIS array receiver (KOSMA): Compact focal plane array optics that includes separate mirrors for the different pixels.

The work on Hot Electron Bolometers is also progressing fast.

All AMSTAR workpackages have started at least one year ago; some (e.g. SRON) some started one and a half year ago. They are close to or at half duration and it is now possible to derive some general trends. The workpackages are essentially on time or ahead of schedule. In most cases, prototype devices (mixers, couplers, amplifiers, local oscillators) have been built and successfully tested. We are now entering a phase of analysis of the results and of improvement of the design. It seems already clear that most of the goals set at the beginning of the JRA will be reached.

The discussion of the results was very lively and, from the participants' point of view very open and useful. A dynamics of exchange of information, concerning designs and fabrication procedures is growing at each meeting. New, more ambitious goals have been jointly set on some programs that will be extended (e.g. on wide-band mixers and amplifiers).

A discussion took place on follow-up research on (sub)millimetre receivers in the frame of FP7. All the groups voiced interest in increasing their participation to a JRA, despite the need of institute-financed matching contributions. Taking into account that the AMSTAR JRA lasted only 3 years, a doubling of the budget was considered as a minimum. Terahertz mixers and on very large focal plane receiver arrays, both bolometric and heterodyne were the research items the most quoted in this context.