

## STATUS of AMSTAR (as of Nov 9<sup>th</sup> 2007)

### **General:**

The current status of the AMSTAR Work packages has been reviewed during a telecon that took place on Nov 9th.

As anticipated, the budgets assigned to the different work packages have been used up, or are close to be. A special case is that of IRAM, which, although it has used the totality of its assigned budget for WP 2.1.1, 2.3.4 and 2.4.1 may have reimburse to RadioNet some of the 2004-05 EC funds, following an EU audit that took place in August. IRAM will ask to continue the work on WP 2.1.1 in 2008 in order to recover these funds (the extension means that IRAM will work on further improvements of the WP 2.1.1 mixer).

IRAM is not the only group which asks to continue to work in 2008 on one of its WPs in order to achieve upgraded goals. The work extension will be done at constant budget (i.e. at that fixed in the last 18-month Implementation Plan), unless more funds may be available through RadioNet.

### **Detailed status:**

#### ***SIS mixer developments:***

WP 2.1.1 (IRAM) A first prototype with a 4-8 GHz IF has been successfully built and tested. Copies of this mixer are currently operating on the IRAM interferometer. New mixer prototype with new SIS junction and upgraded bandwidth (4-8 GHz IF) and noise performance will be tested by the end of this year. Further improvements are foreseen in 2008, during which IRAM proposes to continue the work on the 2SB version of the mixer. Note that the current prototype has already achieved a world record in terms of instantaneous bandwidth/operating frequency ratio (~10 %).

WP 2.1.2 (Chalmers): First DSB mixer with on-chip integrated LO injection coupler was fabricated and tested. Second mixer will be 2SB. New chip awaiting to be tested. Chalmers proposes to extend the work package until February 2008.

WP 2.1.3 (SRON+ Delft): First 650 GHz mixer with world record performances has been developed and tested. A copy has been installed on APEX. New AlN junctions have been studied for a higher-frequency version of this mixer. The participants propose to continue their work until February 2008.

WP 2.1.4 (FG-IGN) WP was completed (4-8 GHz and 4-12 GHz LNAs) and 4 LNAs were delivered to IRAM and SRON. Final report will be written up before the end of the year.

WP 2.2.1 (SRON+NOVA+Delft) First demonstration prototype successfully tested. New prototype will be ready in 2 weeks. Propose to continue until April 2008 (i.e. until the next THz symposium).

WP 2.2.2 (KOSMA) This package which was stopped because of lack of available laboratory and manpower will be resumed. Propose to extend work until April 2008 at same budget.

***HEB Mixer developments:***

WP 2.3.1 (UDelft) WP already completed. Preliminary report available. Final report will be written up soon.

WP 2.3.2 (Obs Paris) WP completed. Final report needs to be written up.

WP 2.3.3 (Chalmers) WP completed. Receiver based on developed mixer will be installed next year on APEX. Final report will be provided in Jan-Feb 2008.

WP 2.3.4 (IRAM) WP completed. Final report needs to be written up.

***Receiver Array developments:***

WP 2.4.1 (IRAM/RAL) Four element prototype array based on SIS mixers driven by photonic LO was built and successfully tested in 2007. Integration with optics (in view of tests of the array on 30-m telescope) was stopped due to temporary absence of A-L Fontana. Work resumes next week with return of A-LF. Full receiver will be tested in lab by end of this year. Test on 30-m telescope will have however to wait April or May 2008, i.e. the end of the winter session.

WP 2.4.2 (UDelft) Has demonstrated the validity of the KID concept for bolometer FP array. Will be completed by the end of the year.

***End of the Year AMSTAR meeting:*** Would be of interest, but most groups have no money left. Meeting will be organized if extra funding can be provided by RadioNet.