Report on the

2nd Solar ALMA Workshop

held in Prague, Czech Republic, 24 June 2013

Bartosz Dąbrowski [1]
Marian Karlický [1]

[1] Astronomical Institute, Academy of Sciences of the Czech Republic, Ondřejov, Czech Republic

The Czech node is one of the ALMA European Regional Centres and is the only one to support solar observations. The second workshop in the series is briefly described: the main themes were the scope of solar observation with ALMA, planning observations and the science that can be achieved.

The Atacama Large Millimeter/submillimeter Array (ALMA) is an international project of many institutions from Europe, East Asia, North America and Chile. Astronomers of the participating countries interact with ALMA via the ALMA Regional Centres (ARC). In Europe, the central node of the ARC is located at ESO and seven additional ARC nodes are spread across the continent. Of these, the Czech ARC node is the only one devoted to solar physics.

The 2nd Solar ALMA Workshop took place at the Faculty of Architecture of the Technical University in Prague and was attended by about 30 people from around the world. The main aim of this workshop was to bring together the ALMA-minded solar community to discuss solar observational issues with ALMA, solar science and planned observations with ALMA. This workshop was a natural continuation of the 1st Solar ALMA Workshop organised by the UK ARC node at the University of Glasgow in January 2013.

The format of the 2nd Solar ALMA Workshop divided into two parts: during the first part the talks were devoted mainly to simulations of solar ALMA observations; the second part featured a discussion. The programme is available on the workshop web page[1].

Observing the Sun with ALMA

Petr Heinzel and Miroslav Bárta presented a talk on observations of solar prominences with ALMA. They demonstrated that the fine structures in solar quiescent prominences can be well detected with the ALMA interferometer. Additionally, they simulated the visibility of fine structure in prominences and their brightness temperatures at various wavelengths, demonstrating the feasibility and usefulness of ALMA observations of solar prominences. Sven Wedemeyer discussed the ability to generate synthetic millimetre-scale maps of quiet Sun regions with ALMA. The temporal and spatial resolution of ALMA will allow ubiquitous small-scale features such as chromospheric fibrils, which outline magnetic fields, and propagating shock waves, their possible interaction, and other, yet-to-be-discovered, processes to be detected. In particular, the mapping of the magnetic field structure is crucial for addressing fundamental questions concerning heating and energy transport in the solar atmosphere.

Gregory D. Fleishman presented a contribution on the discovery of relativistic positrons in solar flares from microwave imaging and polarimetry. He concluded that new radio facilities, including the Jansky Very Large Array (VLA) and ALMA, which have the ability to image circular polarisation at the relevant high microwave/millimetre frequencies, will soon be able to routinely detect relativistic positrons in flares. This advance will provide invaluable information on the spectra of relativistic positrons, their spatial distribution and evolution in solar flares, thus allowing the nuclear component of the flare-accelerated particles to be much better constrained.

Maria Loukitcheva presented a talk about measuring the chromospheric magnetic field with ALMA. She showed estimates of the magnetic field at millimetre wavelengths in active and quiet Sun regions under the assumption that the radiation at these wavelengths is thermal free-free emission (Bremsstrahlung). She discussed these results in the context of future solar ALMA observations.

C. Guillermo Gimenez de Castro presented the Long Latin American Millimeter Array (LLAMA), a new submillimetre facility to observe the Sun. LLAMA is an Argentinian–Brazilian project to build and operate a 12-metre radio telescope that can observe from 45 to 900 GHz. It will have very long baseline interferometric (VLBI) capabilities. LLAMA will be installed in the Argentinian Puna de Atacama region at 4800 metres above sea level in the Salta Province, and less than 200 kilometres distant from ALMA. One of the last unexplored wavelength frontiers for solar flares is in the range of submillimetre to infrared wavelengths,

Bartosz Dąbrowski

Figure 1. The participants of the 2nd Solar ALMA Workshop in Prague pictured inside the Faculty of Architecture, Technical University.

and Pierre Kaufmann reported the detection of a bright 30 THz impulsive solar burst using a new imaging system.

Among others, Robert Laing presented a talk on the current status of ALMA and verification of the solar science capabilities. He gave a short report on the current status of ALMA and plans for Cycles 1 and 2 observations. The Joint ALMA Observatory is in the process of planning solar commissioning and science verification observations and he outlined the opportunities for the solar radio astronomy community to become involved.

The second part of the meeting was mainly devoted to a general discussion of different aspects of solar observations with ALMA. The introduction to this part of the workshop was given by Tim Bastian. There were discussions about ALMA commissioning and science verification activities in the context of one or more ALMA development proposals.

Bartosz Dąbrowski briefly presented the solar ALMA wiki platform. This is a special website (wiki form) devoted to the ALMA-minded solar community and it was created by the Czech ARC node.

This wiki website is only available to registered users and those interested should contact Bartosz directly.

The workshop was immediately followed by the Community of European Solar Radio Astronomers CESRA2013 conference, which also included sessions on solar observation with ALMA.

Links

[1] Workshop webpage: http://www.asu.cas.cz/solar-workshop

Retirement of Massimo Tarenghi

Claus Madsen[1]

[1] ESO

Massimo Tarenghi, chronologically MPG/ESO project scientist, NTT project manager, VLT programme manager and first Director, ALMA Director and ESO Representative in Chile, has retired after 35 years at ESO. A brief summary of his achievements is presented.

Readers of *The Messenger* will be well aware that ESO has recently passed the 50-year mark of its existence. During those five decades, many people — astronomers, engineers, technicians and people of other professions – have worked for the organisation, some for a relatively short period, others for longer. Few people, however, have stayed with the organisation for 35 years or more. In such cases, it almost feels as if they belong permanently to "the house", and this certainly applies to Massimo Tarenghi, who retired on 1 September 2013.

Born in 1945, Massimo was awarded his PhD at the University of Milan in 1970. After post-doc assignments in Milan and Pavia, he became an ESRO Fellow at the Steward Observatory in the USA in 1973, but returned to Europe in 1975. Two years later, on 1 September 1977, he joined the newly established science group at ESO, at the time based in Geneva. This was also shortly after first light of the ESO 3.6-metre telescope, and, with his scientific interests in cosmology, he became one of the first official users of that telescope.

The ESO 3.6-metre and MPG/ESO 2.2-metre telescopes

Unsurprisingly, the telescope was still suffering from teething troubles. "I spent five nights observing — identifying [technical] problems," he later recalled. At the suggestion of André Muller, he continued working with the ESO 3.6-metre during technical time, testing the prime focus camera. Massimo is an incredibly energetic person with a wide range of interests, perhaps especially in technical matters, so it is no surprise that in parallel with his scientific work, he began to play an active role in the technical aspects of the telescope and its instrumentation. Thus he became an "instrument scientist" for the new ESO 3.6-metre prime focus automatic camera that was under development at ESO. "Automatic" meant remotely-controlled plate- and filter-changing, removing the need for the astronomer to ride in the prime focus cage of the telescope during observations.

With Italy and Switzerland expected to join ESO, it was decided to substantially increase the complement in the telescope park. The MPG/ESO 2.2-metre telescope was the first addition, followed by the 3.58-metre New Technology Telescope (NTT). It seemed natural for Massimo to become project scientist for this new 2.2-metre telescope, which had been built for the Max Planck Society for deployment in Namibia, but had never been installed there. Shortly afterwards, Massimo took over the task of project manager, leading the installation of the telescope at La Silla, not just in record time, but also on a shoestring budget. The 2.2-metre telescope saw first light in June 1983, and in 1984 Massimo led the first remote control experiments with this telescope.