

The Asiago Astrophysical Observatory as Centre of Excellence for the Photographic Archives Digitization, in collaboration with the Observatories of Torino and Catania, and with the Specola Vaticana

Cesare Barbieri

The main objectives are:

- recovery, inventory and preservation of photographic material of the highest scientific and historical interest, digitization of the log-books of the observations;
- digitization of several thousands plates of direct images and of objective prism using dedicated hardware units both for digitization (scanners with A3 and A4 format, optical resolution of at least 1600 dpi, digital resolution 14 or 16 bit) and for storage (hard disks, DVDs, NAS). One special unit has been bought for Padova to handle the fine grained spectroscopic material.
- production of several dedicated software packages, both for scanner acquisition and for subsequent data analysis
- extraction of scientific content from the archives on the basis of precise research projects (e.g. astrometry of Solar System object and of stars, search for high proper motion stars, variability of stars and quasars, spectral classification on objective prism plates), to obtain a regular flux of scientific papers on international refereed magazines.
- opening of the Italian digital archives to the international community, that has already lead to the production of scientific papers by researchers of other nations
- optimization of the distribution on the internet of the digital documentation available (observation log-books, digitized plate files), coordinating our work with similar international projects as the Astrophysical Virtual Observatory
- publication of papers on refereed journals, and the presentation of our work at various international meetings.

Personnel:

Barbieri Cesare, Full Professor
Bianchini Antonio, Professor
Fornasier Sonia, Post-Doc fellow
Tamburini Fabrizio, Post-Doc fellow
Magrin Sara, PhD student
Migliorini Alessandra, PhD student
Mezzalana Vincenzo, technician (informatics)
Roi Silvia, technician (informatics)
Segafredo Alfredo INAF technician

plus a number of external contracts.

Collaborations:

INAF
Università di Roma I
Academy of Sciences, Sofia (Bulgaria)
DLR Berlin (Germany)
Specola Vaticana

Research Products:

The products of the research are published papers on international journals (5 refereed papers), and invited communications to Meetings (5).

In order to appreciate the scientific productivity, it must be underlined that the first two years of activity concentrated on the definition and acquisition of the needed hardware and software, and that only in 2004 the activity of writing papers could start.

List of 5 most representative publications:

Johnson, J. A.; Winn, J. N.; Rampazzi, F.; Barbieri, C.; Mito, H.; Tarusawa, K.; Tsvetkov, M.; Borisova, A.; Meusinger, H., 2005, *The History of the Mysterious Eclipses of KH 15D. II. Asiago, Kiso, Kitt Peak, Mount Wilson, Palomar, Tautenburg, and Rozhen Observatories, 1954-1997*, The Astronomical Journal, Volume 129, Issue 4, pp. 1978-1984

Omizzolo, A.; Barbieri, C.; Rossi, C., 2005, *3C 345: the historical light curve (1967-1990) from the digitized plates of the Asiago Observatory*, Monthly Notices of the Royal Astronomical Society, Volume 356, Issue 1, pp. 336-342

Barbieri C., Blanco C., Bucciarelli B., Coluzzi R., Di Paola A., Lanteri L., Li Causi G.L., Marilli E., Massimino P., Mezzalana V., Mottola S., Nesci R, Omizzolo A., Pedichini F., Rampazzi F., Rossi C., Stagni R., Tsvetkov M., Viotti R. (2004). *Status of the Digitization of the archives of plates of the Italian Astronomical Observatories and of the Specola Vaticana*. Baltic Astronomy (vol. 13, pp. 665-670)

Barbieri C., Blanco C., Bucciarelli B., Coluzzi R., Di Paola A., Lanteri L., Li Causi G.L., Marilli E., Massimino P., Mezzalana V., Mottola S., Nesci R, Omizzolo A., Pedichini F., Rampazzi F., Rossi C., Stagni R., Tsvetkov M., Viotti R. (2003). *Digitization and Scientific Exploitation of the Italian and Vatican Astronomical Plate Archives*. Experimental Astronomy vol. 15(1), pp. 29-43 ISSN: 0922-6435.

Barbieri C., Blanco C., Bucciarelli B., Coluzzi R., Di Paola A., Lanteri L., Li Causi G.L., Marilli E., Magrin S., Nesci R., Omizzolo A., Rampazzi F. (2003). *Digitization of the Archives of Plates of the Italian Astronomical Observatories and of the Specola Vaticana*. Mem. S.A.It vol. 73, pp. 351-354.