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Concluding Address

Franco Giovannelli

INAF – Istituto di Astrofisica Spaziale e Fisica Cosmica, Roma
Area di Ricerca di Tor Vergata, Via Fosso del Cavaliere 100, I 00133 Roma, Italy
e-mail: franco.giovannelli@iasf-roma.inaf.it

Abstract. Before to conclude officially this workshop — far from me the idea to attempt some concluding remarks already well done by Giulio Auriemma, Guennadi Bisnovatyi-Kogan and Janusz Ziółkowski —, I would like to comment few highlights coming out from our fruitful week of discussions about *multifrequency astrophysics*, without any pretension of completeness.

Key words. Multifrequency Astrophysics

As far as I know, the first workshop devoted to multifrequency observations of galactic cosmic sources was held in Vulcano in 1984. The proceedings of that pioneering workshop are a clear example on the necessity of this kind of observations in studying cosmic sources (Giovannelli, 1985). In spite that 27 years passed since that time, during which enormous developments in technologies have been realized and then usefully applied to astronomy, a part of the '84 open problems are still open.

Although extragalactic astronomy, meanwhile improved a lot, did neither cancel nor reduce the interest in galactic astronomy on the contrary to what the powerful 'extragalactic scientific lobbies' would like to obtain.

Indeed, the concluding remarks of the first workshop, I will resume in the following, are still valid:

– **Wolfgang Brinkmann** said: ... *Roughly one or two years ago one could get the impression that all interest in high energy astrophysics was moving towards the study of extragalactic objects. Therefore it was a great pleasure for me to see on this workshop how much work is still going on in the field of galactic accreting sources. In particular I was very impressed to learn about the enormous efforts put into long term observing programmes in the radio, IR, optical, UV, X-ray frequency ranges (for example on A 0535+26 or on SS 433) which take so much of time but which are in many cases absolutely necessary to get more insight into the physics of these sources. I think it became clear in our discussions that there is still a lot of work to be done and, in particular, that many of the "well established" simplified models for these sources will have to be reconsidered in the light of extended observations over a broad energy range*;
– **Michael Friedjung** said: ... *I would like to end on a note of caution. Novae have*

Send offprint requests to: F. Giovannelli

been observed for many years, and are still badly understood. Other objects which have been more recently discovered such as gamma-ray bursters and Geminga are much less observed, but this has not stopped a lot of theoretical modeling. There are often fashions in models and a "bandwaggon effect. There can be an almost "political influence when certain colleagues succeed in imposing their ideas on others ...;

It seems that it was written just as foresight of the history of GRBs !!!

- **Joe Smak** said: ... The overall usefulness of a conference defined by the physical process(es) rather than by the type(s) of objects;
- **Franco Giovannelli** said: ... *This workshop has clearly demonstrated that the simplified models for the accreting sources must be revisited in view of the simultaneous multifrequency observations, which are the only deep method of analysis of the internal physical processes in these systems*.

We can say now that all these remarks are still valid and during this workshop devoted to high energy cosmic sources we have had the proof.

Undoubtedly the advent of spacecrafts gave a strong impulse to astronomy; starting roughly from middle 1970ies almost all the electromagnetic spectrum was continuously surveyed by the many space experiments. A large amount of excellent-quality data coming from space experiments rendered the data, acquired during many centuries from the ground, only a small fraction of the total now available (e.g. Giovannelli & Sabau-Graziati, 2004). Then, **The GOLDEN AGE of Multifrequency Astrophysics** began.

Multifrequency observations are now considered by the whole community essential for a better understanding of the physics governing the universe. Our pioneer campaigns (since middle 1970ies) of multifrequency observations of cosmic sources were a premonition of the coming 'new' astrophysics.

The idea of reuniting the scientific community in Vulcano every year — in the odd years physicists for discussing the *"Multifrequency Behaviour of High Energy Cosmic Sources"* are guests of the Frascati Workshop series since 1995 (with the first historical workshop held in 1984), and in the even years physicists for discussing the *"Frontier Objects in Astrophysics and Particle Physics"* are guests of the Vulcano workshop series since 1986 — turned out as a winning idea that rendered famous our Vulcano meetings.

Both series of workshops are converging into the *newborn astroparticle physics* field, that is the most powerful tool for studying the physics governing the Universe.

However, there are many problems in performing Simultaneous Multifrequency, Multisite, Multiinstrument, Multiplatform measurements due to: i) objective technological difficulties; ii) sharing common scientific objectives; iii) problems of scheduling and budgets; iv) politic management of science.

In conclusion, during this fruitful workshop, I hope to have demonstrated once more the *Vulcano Theorem* enunciated in 1984 in my concluding address: **It is possible to develop science seriously even if smiling**.

Acknowledgements. On behalf of the SOC and LOC, I am pleased to thank all participants and especially the speakers for their active contributions in rendering this workshop updated with their talks, alive with their discussions, and friendly with their attitudes. I hope to meet all of you once again during our next Frascati Workshop. A special thank to Dr Riccardo Antonini who gave a talk in a Special Night Session about "A Nuclear Weapons Free World: we already live in". The corresponding paper is available and will be sent upon request at the following addresses: franco.giovannelli@iaps.inaf.it or r.antonini@governo.it.

References

Giovannelli, F. (ed.), 1985, *Multifrequency Behaviour of Galactic Accreting Sources*, Editrice SIDEREA, Roma, Italy, p. 1–371.

Giovannelli, F., & Sabau-Graziati, L., 2004, SSR, 112, 1