

## INTRODUCTORY REMARKS

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I believe this is the first IAU Symposium with the objective of bringing together researchers in different fields, plasma physicists, space physicists and astrophysicists, to permit cross-fertilization of knowledge and ideas on related problems. These problems refer to understanding collective effects and their signatures in unstable magnetized plasmas. Similar processes play an important role in problems as diverse as the stability of jets in extragalactic radio sources and the release of energy by interacting loops in solar flares, for example. In this symposium we cover five different areas. In order of increasing distance from us, they are laboratory plasma experiments, magnetospheric current systems, solar flares, stellar flares and extragalactic sources. The active ejecta of relativistic particles and hot plasma seen in solar flares provide the only examples of a violent phenomenon subject to detailed diagnostic examination. Many active stars and galaxies display ejecta of similar appearance. The application of plasma physics ideas to astrophysics has been, until now, inversely proportional to the distance of the object from us. The laboratory plasma physicists and magnetospheric plasma physicists are the only ones who can conduct experiments and in-situ measurements of plasmas and compare the results with their theoretical ideas. They are beginning to be interested in solar plasmas, less so in stellar plasmas, and even less in extragalactic systems. The objective of the symposium was to get plasma physicists interested in astronomical problems, and the astronomers in plasma physics. In that sense it was a unique symposium. And the interactions that took place between the plasma physicists and the astronomers in this symposium lead us to believe that the object of the symposium was accomplished.

The history of the symposium goes back to April 1981, when I was visiting, as a guest of the U.S.S.R. Academy of Sciences, the P.N. Lebedev Physical Institute, in fact the laboratory and theoretical group established by Syrovatskii. Several things happened at that time: Syrovatskii had died a year or so before then; the Soviets had organized a conference somewhere in Belourussia in memory of Syrovatskii on "Current Sheets in Astrophysics", a subject which Syrovatskii had

pioneered and promoted so vigorously for a good fraction of his life; and Syrovatskii's Annual Reviews of Astronomy and Astrophysics article "Pinch Sheets and Reconnection in Astrophysics" was being finished posthumously by Eulanov, Frank and Sasorov, three loyal and devoted colleagues of Syrovatskii. It is there the idea of this symposium was really conceived. What better way to pay tribute to a man like Syrovatskii! In honor of the man who has done so much to promote the field, we have dedicated this symposium to the memory of Sergei Ivanovitch Syrovatskii!

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