Maurice M. Shapiro

My association with Maury started when I joined University of Maryland's High Energy group in 1961, a time when Maury had a very active group working in particle physics and cosmic rays using the nuclear emulsions and was starting a bubble chamber group (some of the members were Bernard Hildebrand, Bert Stiller, Rein Silberberg ,C.H.Tsao and Bob Glasser). There was active interaction between George Snow(Md) and the NRL group, both studying properties of high energy particles with nuclear emulsions and bubble chambers. I was a consultant with the NRL group for some ten years.

Maury did his Ph. D. with Arthur Compton (1942) using early emulsions exposed at Mt. Evans – both emulsions on glass plates and stripped emulsions to study cosmic ray induced stars. He wrote definitive reviews on the emulsion technique in 1941 and then in 1958. He did many experimental investigations related to cosmic rays and particle properties after the war when he joined NRL.

Using emulsion chamber technique and high altitude exposures, he measured and verified saturation of relativistic rise in ionization, a measurement of helium and proton flux at high rigidity, accurate measurements of secondary to primary ratio (Li,Be,B/CNO), with his colleagues they did one of the best measurements of neutral pion life time . He did important measurements of properties of heavy baryons.

In 1960s, he investigated the ramifications and limitations of supernova theories for the origin of cosmic rays and discussed the production of high energy neutrinos and gamma rays from these sources.

He was one of the active members of the DUMAND project to study high energy neutrinos. With Rein Silberberg explored the capabilities of such a project .

His group made seminal contributions on quantitatively exploring isotope

ratios, using isotopes to determine the time lag between explosion and acceleration in supernova sources, to suggest the importance of FIP in injection, the detailed analysis of the so called Slab-model and re-acceleration of cosmic rays. (Shapiro,Silberberg and Tsao in Cosmology, Fusion and other Matters, ed by Fred Reines, 1972)

When he became emeritus, he was still very active both in research and in running the Erice School of Cosmic ray Astrophysics (after 1982) and he was interested in having a base of operations for the school. He approached me whether Maryland would be a possibility. I was delighted and suggested a Visiting professorship to be able to continue his work (without having to move out of the Washington DC area). Thus started his association with Maryland which continued until his death.

Maury was not only an outstanding scientist, but he was a true gentleman and a good friend. He was an ambassador for the field of Cosmic Rays. His friendly personality, always warm and kind to students and colleagues was quite infectious. He contributed to both experimental and theoretical investigations of cosmic rays and their central role in connecting many diverse disciplines in particle physics, astrophysics, geophysics, accoustical physics ....

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