

Ronald Shellard, the physicist, the leader, the friend

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I have been working together with Ron Shellard in various experiments and projects for more than three decades. He was not only a close scientific colleague, but also one of my closest friends. I will try to mention here the most relevant of my recollections and reflections. Probably the first time I met Ron was at CERN at the end of the '80's when, as a leader of the group from the Centro Brasileiro de Pesquisas Físicas (CBPF), he joined the DELPHI collaboration at the Electron Positron Collider (LEP). His group, in spite of being numerically small, was able to give important contributions to the trigger and data acquisition system and to the treatment and analysis of the raw data. This was the first time I could appreciate the efficiency of his leadership. After the LEP experience, we found ourselves again together in another project, the construction and operation of the Auger Observatory for the study of very high-energy cosmic rays. As a leader of the group from CBPF, he also promoted an intense participation of the Brazilian industry. It is not easy to find photos of Ron in the official repository of the pictures of the Auger Observatory.

This may say quite a lot about the modesty of Ron. In the official photo taken in 2005 at the Celebration of the Auger Observatory, most people tried to converge to the center of the stage while Ron was modestly sitting on the edge of the

row. In 2012, he organized a symposium in Rio at the CBPF whose title was "100 Anos de Raios Cósmicos" to celebrate Hess's discovery of cosmic radiation in 1912. He kindly invited me to report on "High-lights on Cosmic Ray Studies in Italy – a Historical Survey". This invitation gave me the opportunity, while preparing my talk, to learn a lot about the early experimental and theoretical activities on cosmic ray physics. As chair of the Local Organizing Committee, Ron spent a lot of time and effort to organize the cosmic ray conference ICRC 2013 in Rio de Janeiro. I wish to quote here the statement from the CERN Courier, November 2013: "A major conference in the fields of astroparticle and solar physics took place for the first time in South America this year. Exciting results were an important part of a lively time in Rio de Janeiro, as Ronald Shellard reports." As Director of the CBPF, he invited me to Rio to become research associate in CBPF. Following his suggestions, I prepared the various documents needed to get the fellowship. It was the "Programa Ciência sem Fronteiras". Thanks to his active support, I got the Bolsa Pesquisador Visitante Especial and I could then move from the "Cidade Eterna", where I was living, to the "Cidade Maravilhosa". That was for me the start of a few years of a nice and exciting collaboration with Ron and of lively interactions with the other colleagues in CBPF.



Figure 1: Ronald Shellard at Pierre Auger Observatory, Malargüe-Argentina, is the first sitting on the right.

For a few months during my stay in Rio at CBPF (2015-2016), I was sharing the same room with Ron. Every day we had discussions on a new project, a high-energy photon Observatory in South America that we called LATTES (acronym for Large Array Telescope for Tracking Energetic Sources) in honor of Cesare Lattes, the famous Brazilian physicist well known for the discovery of the pion. Ron was a great advocate of that project. He fully realized the importance of a large ground array of detectors in South America for the study of photons in the TeV energy region with strong Latin American involvement. The instrument was of course complementary to HAWC (located in Mexico) in terms of sky coverage and to the air Cherenkov telescopes HESS/CTA in terms of technique. I remember that he devoted a lot of time to study the configuration of the array and to carefully scan maps of South America to find a site that could be suitable to locate the instrument with the obvious requirements

of being almost flat but at very high altitude and not too far from roads and communication infrastructures. This project is now taking shape as SWGO (South Wide-Field Gamma-ray Observatory), a collaboration with important Brazilian participation. At the same time Ron worked hard for the realization of a telescope of Resistive Plane Chambers (RPC) with glass electrodes following the design developed in Portugal at Lisbon and Coimbra. The RPC telescope was set up in a small room on the side of the CBPF laboratory. A detector of this kind was supposed to be used for the upgrading of the new phase of the Auger Observatory, but eventually the more conventional and cheaper option of scintillation counters was adopted. Here, at the end of my remembrance of Ron, I would like to say that I have been writing this short note with great sadness for the loss of an unforgettable Colleague.