

Cosmic bullets : cosmic rays at extreme energies

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One of the most fascinating puzzles in particle astrophysics today is that of the origin and nature of the highest energy cosmic rays. These particles have energies orders of magnitude beyond even the future capabilities of any earthly particle accelerator. Such energies are so extreme that they could arise in only the most violent places in the universe. The Pierre Auger Observatory is a major international effort to make precise, high statistics studies of the cosmic rays with energies above 10^{19} eV. The Southern Observatory was constructed in the Province of Mendoza, Argentina and is designed to work in hybrid mode incorporating both a ground array of 1600 particle detectors spread over 3000 km² with fluorescence telescopes placed on the boundary of the surface array. An overview of the field as well as current characteristics of the observatory and recent results will be presented.



Danilo Zavrtanik studied physics at the University of Ljubljana and obtained his PhD in 1987. He became professor of physics at the University of Ljubljana in 1991 and served from 1992 to 1996 as Director General and member of the scientific council of the Jožef Stefan Institute. In 1997 he became also professor at the Nova Gorica Polytechnic and its President and head of the Laboratory for astroparticle science in 1998. This institution became in 2006 the University of Nova Gorica of which he is now the President. At CERN he held various steering positions at the CPLEAR and DELPHI collaborations from 1988 to 2001. Presently he chairs the Pierre Auger Collaboration Board and he is a member of the Executive Committee of this collaboration. He is a member of the Science and Technology Council of the Republic of Slovenia and is currently president of the Slovenian Rectors' Conference. He was awarded the National Award for Science in 2004, the Nova Gorica Municipality Award and the President of the Republic of Slovenia „Order for service“ in 2005. Since 2009 he has been a member of the Governing Board of the University of Luxembourg.