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YangBaJing Cosmic Ray Observatory

The YangBaJing (YBJ) observatory (90.522E, 30.102N, 4300M a.s.l.) is located in a wide basin 90KM NW from Lhasa, the capital of Tibet. It is on the joint point of an interstate high way connecting Lhasa and interior of China and an international high way connecting Lhasa and Nepal. Currently, YBJ observatory hosts two cosmic ray experiments. One is Sino-Japanese collaborated experiment called ASγ, a sampling detector which covers 1% of the area and has been operated since 1990. Another one is a Sino-Italian one called ARGO-YBJ, a full coverage one, in full operation since 2006. ASγ uses scintillation counters and ARGO-YBJ uses resistive plate chamber (RPC) to detect the arrival time and number of secondary particles, with which the original direction and energy of CRs particles can be determined. As a sampling detector, ASγ has threshold energy at a few TeV while ARGO-YBJ can significantly decrease energy threshold down to about 300GeV. Both experiments have the advantages in high duty cycle and large field of view, good in the observation of unknown and sporadic sources. As the major scientific objectivities, both experiments study the origin and acceleration of CRs by observing TeV γrays emission and by measuring the spectra of CR nuclei up to tens of PeV. The propagation is studied by the anisotropy of CRs. Besides, ARGO-YBJ measures the hadronic interaction cross section from TeV to PeV while ASγ has a long time monitoring on solar neutron and CRs' sun shadow. On interdisciplinary research, we installed neutron monitor, neutron telescope as well as muon telescope for the studying of the solar cosmic rays and for the monitoring of the space weather. Recently, we start to do the seismological and meteorological study by searching for their correlations with intensity variation of CRs.

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