

COSMIC RAY MUON PHYSICS

S. Blagus, D. Rendić and V. Valković
"Ruđer Bošković" Institute, Zagreb, Yugoslavia

Cosmic ray research is of great importance in the study of astrophysics and high energy physics phenomena. Essential problems, like origin of cosmic rays, anisotropy, cosmic radiation composition and acceleration mechanism up to the energies of 10^{21} eV are at the present time unsolved.

Cosmic ray muon physics is one possibility of studying these problems. In addition comparison of the experimentally measured and theoretically obtained muon spectra and μ^+/μ^- ratio can give valuable information about validity of high energy interaction models. From intensity measurement on various zenith angles the validity of special relativity at small distances can be tested and fundamental length derived. Stable or nearly stable heavy hadrons and leptons produced by interaction of high energy cosmic rays with earth's atmosphere might be directly detectable in cosmic ray experiments. Our aim is to design the cosmic ray telescope system for these purposes. The set up will consist of six large area scintillation detectors and drift chamber system for particle track determination. The magnetic spectrograph for particle momentum measurements could be added to the telescope system in the future.