PACHMARHI ARRAY OF ČERENKOV TELESCOPES AND ITS SENSITIVITY

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Pachmarhi Array of Čerenkov Telescopes (PACT) has been designed to search for celestial TeV $\gamma-$ rays using the wavefront sampling technique. PACT, located at Pachmarhi, (latitude $22^\circ 28'$ N, longitude $76^\circ 26'$ E, altitude 1075 m) consists of 25 telescopes deployed over an area of 80 m $\times$ 100 m. Each telescope consists of 7 parabolic reflectors, each viewed by a fast phototube behind a 3° mask at the focus. The density and the arrival time of the photons at the PMT are recorded for each shower. The energy threshold and the collection area of the array are estimated, from Monte Carlo simulations, to be $\sim$ 1 TeV and 10^5 m^2 respectively. The accuracy in determination of arrival angle of a shower was estimated to be 0.1° in the near vertical direction. About 99% of the off-axis hadronic events could be rejected from directional information alone. Further, nearly 75% of the on-axis hadronic events could be rejected using species sensitive measurements like the photon density fluctuations. These cuts on data to reject background would retain $\sim$ 44% of the $\gamma-$ ray signal. The sensitivity of the array for a 5σ detection of $\gamma-$ ray signal at a threshold energy of 1 TeV has been estimated to be $\sim 2.2 \times 10^{-12}$ photons cm^{-2} s^{-1} for an on source exposure of 50 hours. The PACT set-up has been fully commissioned and is collecting data. The details of the experimaent will be presented.