Muon Rate –
Pressure Anticorrelation

Pittsford Mendon High Muon Research 2004 - 2005

Physics Honors 4th Period Class
U of R Detector

- 2 scintillating plates
- 370Hz detection rate
- 5 minute intervals
- Extremely precise compared to other smaller detectors
Muon Rate vs. Pressure

U of R Muon Detector Data | October 2004

$y = -0.7325x + 507.08$

$R^2 = 0.9257$
$y = -0.0772x + 11.907$

$R^2 = 0.579$
Analysis

- Anticorrelation between muon rate and barometric pressure
- Pressure increases the density of the atmosphere
- Greater rate of interaction between muon particles and atmospheric molecules
- Loss of energy through the ionization of atmospheric molecules increases likelihood of muon decay
Pressure-Corrected Muon Rate

Time

Pressure Corrected Muon Rate