

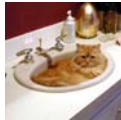
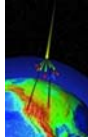
# The Effect of the Time of Day on Muon Count

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## What we know...

As we all know, muons are formed when solar winds collide with the Earth's atmosphere. This impact creates muon and muon showers.

Muons pass through every day objects as if they were not there. Muons are passing through you at this very moment, even this cat!



## The Question...

The question is will daylight hours, when the we are facing the Sun, prove to yield a greater muon rate?

This question give rise to a greater question, does the Sun produce enough solar wind to make a noticeable increase in muon production?

We also gathered data from the large muon detector here at the University of Rochester during the same time interval. We then compared this data to the data gathered with our smaller classroom sized paddle back in Canandaigua.

This giant paddle measures 0.75 m by 3.00 m and is located in the attic of the Bausch and Lomb Hall (the physics building).



The data from this detector can be found on the internet at the site...  
<http://web1.pas.rochester.edu/~jmetv/i1/logs/>

## Sample of data collected at Canandaigua using our paddles

Interval	End Date	End Time	Counts	Rate (Hz)	Sigma Rate	Pressure(kPa)
0	4/13/2006	19:00:00	11803	0.030178	97	3.278611
1	4/13/2006	20:00:00	12018	0.030452	97	3.338333
2	4/13/2006	21:00:00	11844	0.030231	97	3.29
3	4/13/2006	22:00:00	12000	0.030429	97	3.333333
4	4/13/2006	23:00:00	11801	0.030176	97	3.278056
5	4/13/2006	0:00:00	11815	0.030194	97	3.281944
6	4/13/2006	1:00:00	12071	0.030519	97.1	3.353056
7	4/13/2006	2:00:00	11983	0.030407	97	3.328611
8	4/13/2006	3:00:00	11895	0.030296	97	3.304167
9	4/13/2006	4:00:00	12039	0.030478	97	3.344167
10	4/13/2006	5:00:00	12079	0.030529	96.9	3.355278
11	4/14/2006	6:00:00	12076	0.030525	96.8	3.354444
12	4/14/2006	7:00:00	11987	0.030413	96.8	3.329722

## Sample data collected from the U of R web site

Date	Time(UTC)	Pressure(hPa)	Detector Temp(C)	Counts	Rate(Hz)	Sigma(Hz)
20060413	19:00:00	1022.2	25.2	113253	377.51	1.122
20060413	19:05:00	1023.1	25.1	112664	375.547	1.119
20060413	19:10:00	1022.4	25.3	111846	372.82	1.115
20060413	19:15:00	1023.6	25.3	112540	375.133	1.118
20060413	19:20:00	1023.5	25.2	112651	375.503	1.119
20060413	19:25:00	1022.6	25.2	112679	375.597	1.119
20060413	19:30:00	1023.1	25.3	112525	375.083	1.118
20060413	19:35:00	1022.0	25.3	112511	375.037	1.118
20060413	19:40:00	1022.8	25.2	112615	375.383	1.119
20060413	19:45:00	1022.9	25.2	113163	377.21	1.121
20060413	19:50:00	1021.6	25.1	112963	376.543	1.12
20060413	19:55:00	1022.0	25.2	113296	377.653	1.122

