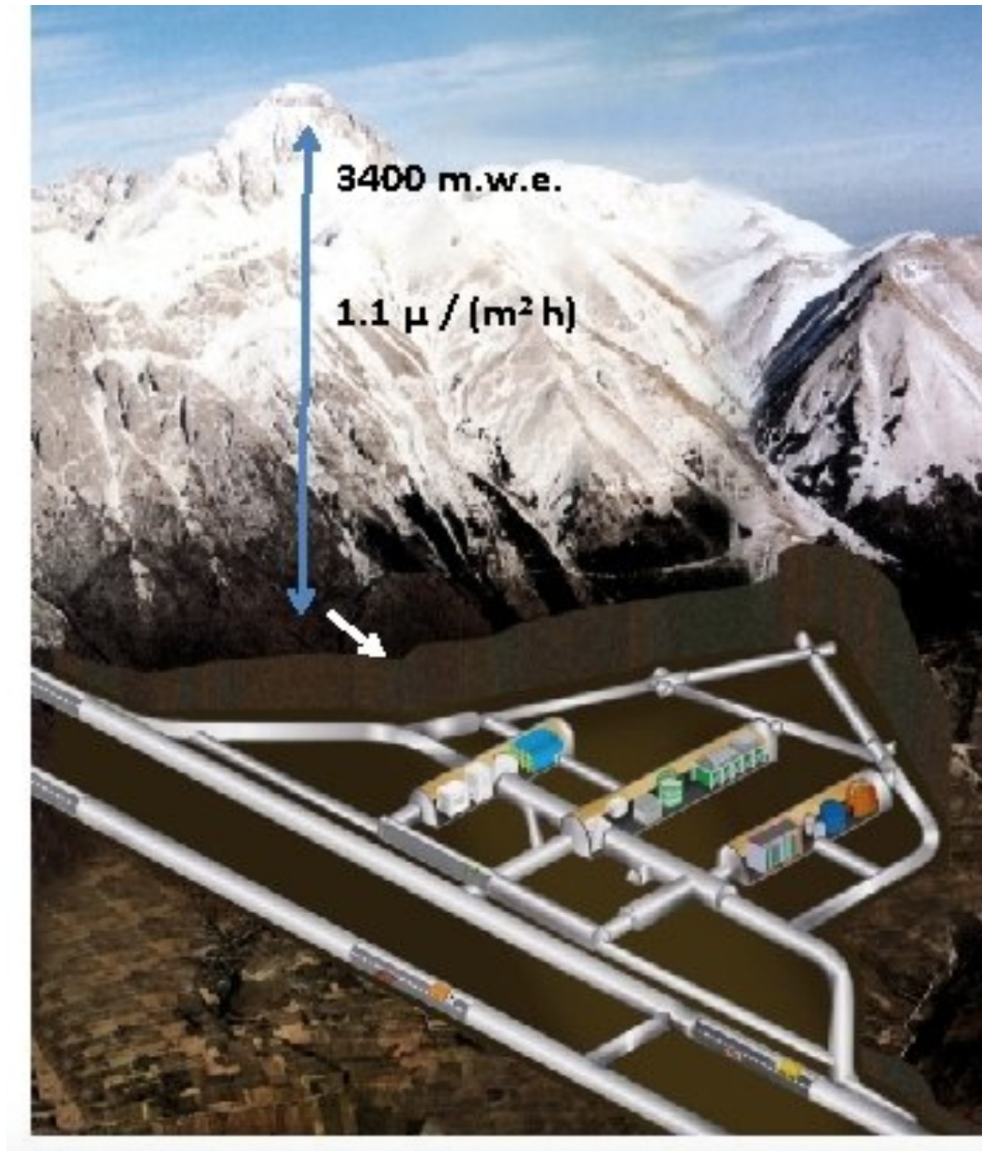




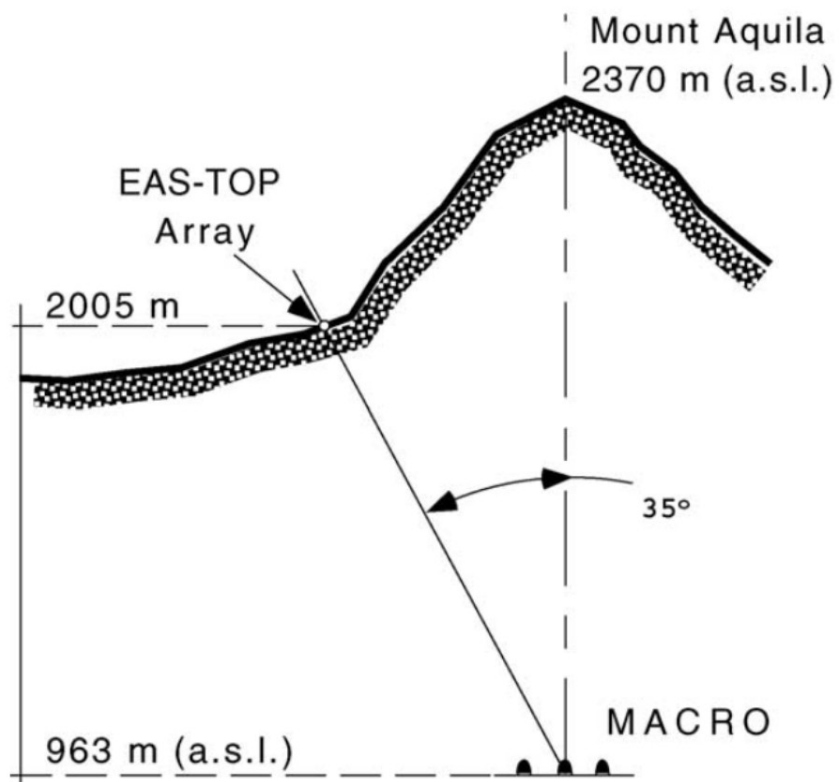
1982: Opening of the Gran Sasso Tunnel  
[start construction of the underground laboratory]



1986  
Tom Gaisser is  
invited to Frascati  
an extended visit to  
“educate” the italian  
physics community

and I meet him for  
the first time .....

# EASTOP detector at Gran Sasso







Tom:

An outstanding scientist  
who played a crucial, central role in the birth  
and development of what is now called  
*Astroparticle Physics*.

## Muons in gamma showers from Cygnus X-3?

T. Stanev\* and T. K. Gaisser

*Bartol Research Foundation of the Franklin Institute, University of Delaware,  
Newark, Delaware 19716*

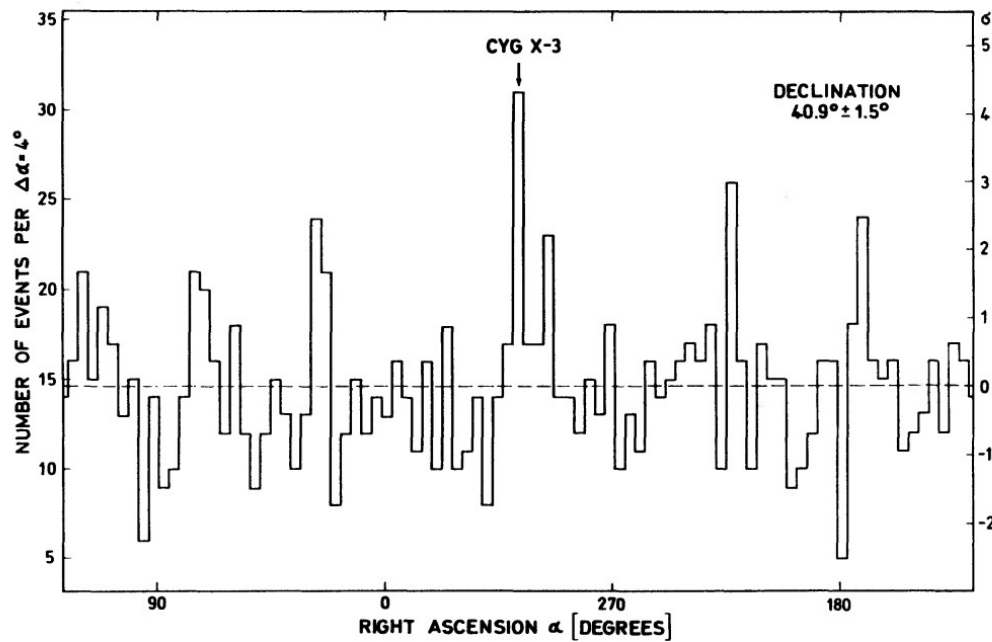
F. Halzen

*Department of Physics, University of Wisconsin—Madison,  
Madison, Wisconsin 53706*

(Received 5 March 1985; revised manuscript received 2 May 1985)

The Kiel experiment found that the average density of muons in gamma showers from Cygnus X-3 is 80% of that of nucleon-induced air showers. We therefore calculated again the muon content of photon-induced showers. Our calculations confirm the widely held belief that gamma showers should be  $\mu$ -poor and that this should indeed be a discriminating signature for electromagnetic origin of a shower.

### GAMMA-RAYS FROM CYG X-3



Detection of Cygnus X-3  
(Kiel air shower detector)  
ApJ may 1983.

23<sup>rd</sup> february 2001

Moriohiro Honda  
Tom Gaisser  
Giuseppe Battistoni  
P.L.  
Takkaki Kajita





# FLUX OF ATMOSPHERIC NEUTRINOS

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T. K. Gaisser<sup>1</sup> and M. Honda<sup>2</sup>

<sup>1</sup>*Bartol Research Institute, University of Delaware, Newark, Delaware 19716;  
e-mail: gaisser@bartol.udel.edu;* <sup>2</sup>*Institute for Cosmic Ray Research, University  
of Tokyo, 5-1-5 Kashiwanoha Kashiwa-shi, Chiba 277-8582, Japan;  
e-mail: mhonda@icrr.u-tokyo.ac.jp*



Physics Reports 258 (1995) 173–236

# **PARTICLE ASTROPHYSICS WITH HIGH ENERGY NEUTRINOS**

**Thomas K. GAISSER<sup>a</sup>, Francis HALZEN<sup>b</sup>, Todor STANEV<sup>a</sup>**

<sup>a</sup> *Bartol Research Institute, University of Delaware, Newark, DE 19716, USA*

<sup>b</sup> *Department of Physics, University of Wisconsin, Madison, WI 53706, USA*

# Cosmic-ray composition around $10^{18}$ eV

T. K. Gaisser, Todor Stanev, and Serap Tilav\*

*Bartol Research Institute, University of Delaware, Newark, Delaware 19716*

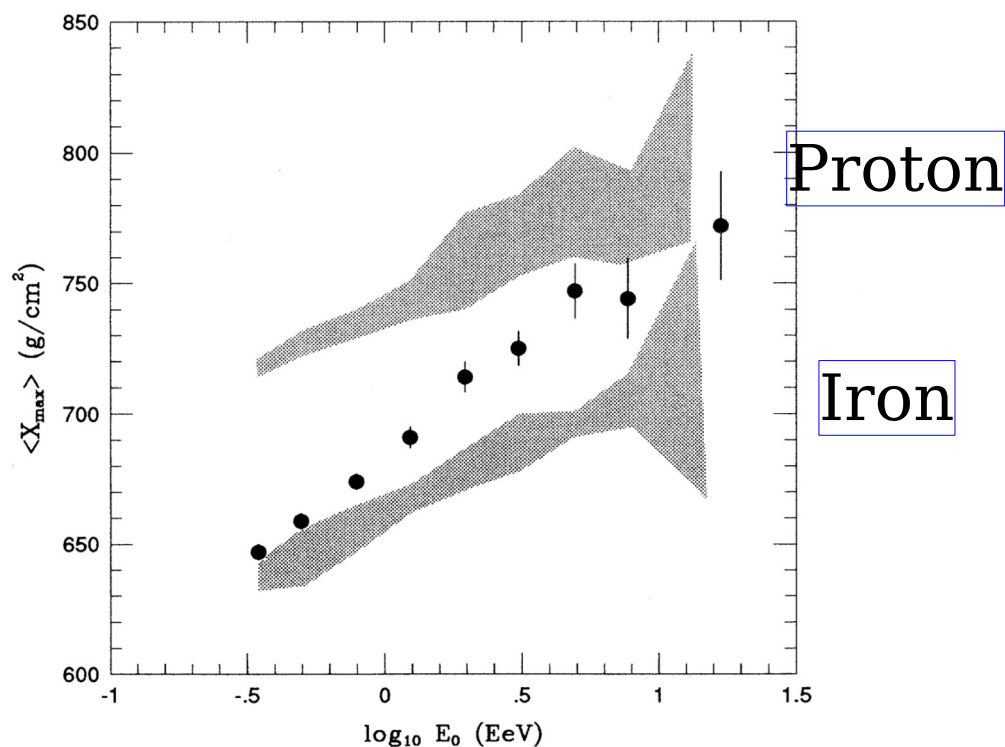
S. C. Corbato, H. Y. Dai, B. R. Dawson,<sup>†</sup> J. W. Elbert, B. Emerson,  
D. B. Kieda, M. Luo, S. Ko, C. Larsen, E. C. Loh, M. H. Salamon, J. D. Smith,  
P. Sokolsky, P. Sommers, J. Tang, and S. B. Thomas

*Department of Physics, University of Utah, Salt Lake City, Utah 84112*

D.J. Bird

*Physics Department, University of Illinois, Urbana, Illinois 61801*

(Received 9 October 1992)



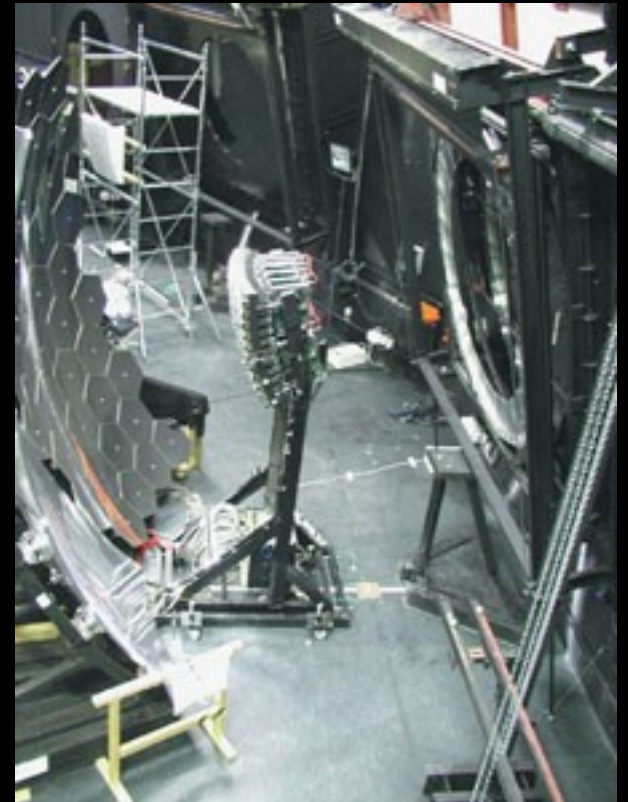
# Fly's Eye detector



Fly's Eye detector



Auger  
fluorescence detector









Francis Halzen  
[Cern Courier obituary]

Tom took to the task of building IceTop with gusto. For several summer seasons he travelled to Antarctica, staying there for weeks at a time ... He delighted in the hard physical labour and the camaraderie of everyone engaged in the project, from bulldozer drivers to his colleagues and their students.

Tom's Role as spokesperson of IceCube

Tom:

A man of broad interests  
and profound culture.



[Lucretius on atoms]

And their reciprocal movement. The same atoms  
Constitute ocean, sky, lands, rivers, sun,  
Crops, bushes, animals; these atoms mingle  
And move in different ways and combinations.  
Look—in my lines here you can see the letters  
Common to many of the words, but you know  
Perfectly well that resonance and meaning,  
Sense, sound, are changed by changing the  
arrangement.  
How much more true of atoms than of letters!

Lucretius “De Rerum Natura” I,814-829

# American Journal of Physics

## Vol. 45 (1977)

### Partons in antiquity

Julia H. Gaisser

*Department of Latin, Bryn Mawr College, Bryn Mawr, Pennsylvania 19010*

T. K. Gaisser\*

*Bartol Research Foundation of The Franklin Institute, Swarthmore, Pennsylvania 19081*

(Received 16 November 1976)

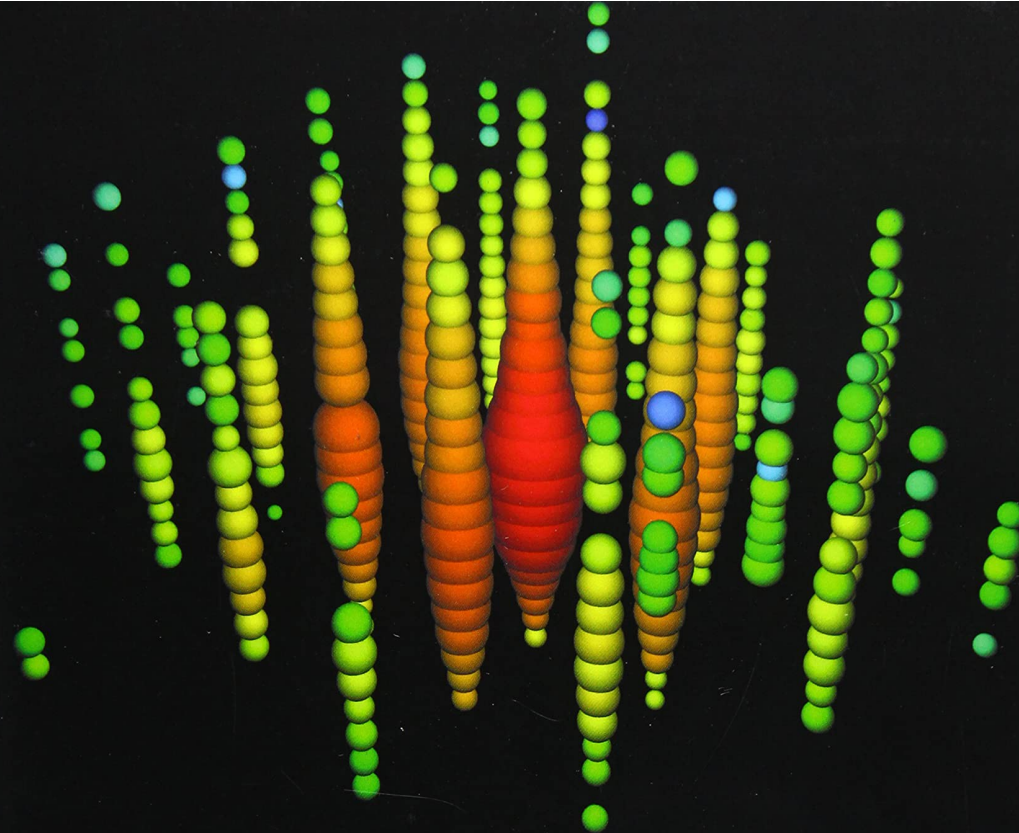
We point out that the idea of confined quarks or partons as constituents of the elementary particles was already present in the Greek atomic theory. We describe some similarities and differences between ancient and modern confinement, and we suggest that in both cases the idea is in large part a response to an inherent conflict between the intuitive notion of infinite divisibility and the idea of discrete fundamental atoms of matter.

### I. GREEK ATOMIC THEORY

Common to many of the words, but you know  
Perfectly well that resonance and meaning,

Julia Gaisser  
[professor  
of Latin Literature]  
Swarthmore College





# COSMIC RAYS AND PARTICLE PHYSICS

SECOND EDITION

Thomas K. Gaisser, Ralph Engel  
and Elisa Resconi

Tom:

A man that was profoundly respected and admired, not only for his obvious knowledge and scientific competence, but also for the wisdom and attention that he showed in his interactions with everybody, starting from the youngest researchers.



Tom's imprint  
in the field of Astroparticle Physics, thanks to  
his book,  
his papers,  
countless lectures  
and innumerable discussions  
remains profound and lasting.

....

*and profound and lasting is the admiration  
and affection for him for those who had  
the fortune to meet him and know him ....*

.....