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cedented and controversial step into politics. The PHYSICS TODAY staff may also be at fault. Presumably you regard yourselves as a news magazine, digging out information of interest to your readers, and not merely as a propaganda sheet.

The other breakdown here was the nugatory role of the Forum on Physics and Society. This issue is a perfect example of the kind of thing the Forum was created to handle, and the Forum's failure to promote full public discussion of this was a deep disappointment to those of use who have supported the Forum from its inception. The sole inkling of some impending action that a keen-eyed observer could glean was a single morally anemic missive in the Forum newsletter.[1] That author urged us to break existing hotel contracts and dare the hotels to sue us. If this is the exalted moral insight we physicists have to offer to society at large, perhaps we should stick to physics.

Overall the impression is of a star-chamber, establishment proceeding. Some of us, who object in conscience to the politicizing of American science and who have already spent much time and effort against it,[2] have now had to resign. Well, that's that.

References

1. P. J. Gollom, "Letter: The Equal Rights Amendment and the APS," *Physics and Society* **7**, (No. 2), 1 (1978).
2. J. E. Felten, letter, *Astronomy Quarterly* **2**, 107 (1978).

JAMES E. FELTEN
Goddard Space Flight Center
Greenbelt, Maryland

1/14/81

Grand unified mass

A recent article on the unified theory of Elementary Particle Forces by Howard Georgi and Sheldon Glashow (September 1980, page 30) points out that the unification of strong, weak and electromagnetic interactions involves the appearance of particles having almost macroscopic masses of about a nanogram ($\sim 10^{14}$ GeV). Such superheavy particles seem to be an inevitable feature of most grand unified theories. Gravitation is still, however, left out of these various schemes.

I wish to report in this letter one interesting result of my humble efforts to arrive at a unified understanding of all the four fundamental interactions. This is the appearance of a quantity having the dimensions of mass and involving the coupling constants of *all the four* fundamental interactions.

It reads:

$$M = (\hbar^2/m_e)[\alpha_E\, \alpha_s (G_N\, G_F)^{-1/2}]$$

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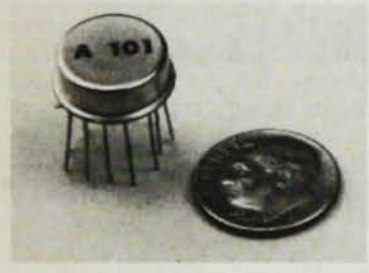

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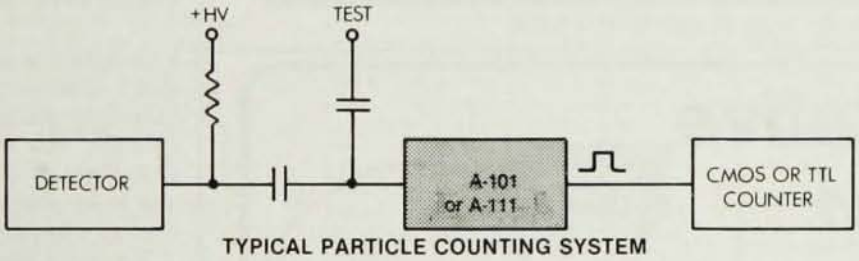

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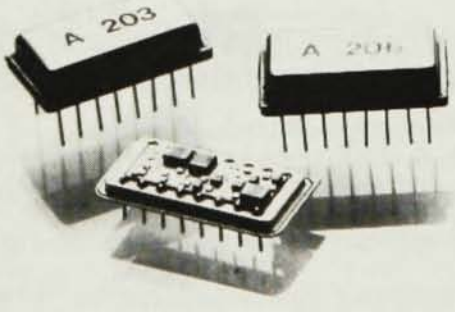

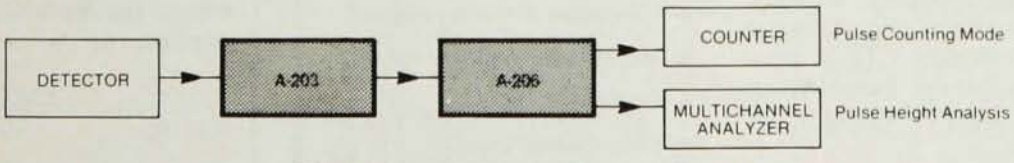

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The various quantities are: m_e (the electron rest mass) $= 10^{-27}$ gm, $\hbar = 10^{-27}$ erg sec (Planck's constant), α_E = electromagnetic fine structure constant = $1/137$, α_S = Pion–nucleon strong coupling constant = 14, G_N = Newton's gravitational constant = 6.7×10^{-8} cgs units, G_F = Universal Fermi weak interaction constant = 1.5×10^{-49} erg cm^3. *M thus turns out to be a gram*! We note that the expression for M does not involve any arbitrary numerical factors or factors of π. The dimensionless constants α_E and α_S occur in their lowest power. The proton being subject to decay, the electron rest mass is more appropriate. Thus the equation is a simplest possible combination.

It is also clear that no matter what units are chosen for the dimensional constants (like G_N, m_e, G_F) M will always have the magnitude of a one gram mass. It therefore appears that there is some justification for recommending the gram as a fundamental unit of mass!

C. Sivaram
Indian Institute of Science
1/26/81 *Bangalore, India*

Physicist productivity

I read with a certain degree of amusement the comments concerning the longevity parameter W/H^2 and most recently the oblate spheroidal condition given by G^2/H (December, page 72) and their relation to the life expectancies of physicists.

We have never measured physicists by how long they live, but by what they produce, and a relation between productivity and the above parameters might be interesting. A good physique is the result of physical activity and good physics is the product of mental activity, and for a physicist there must be some correlation between mental and physical activity. Thus if we set $\Delta H \simeq 0$, that is, all physicists are of the same height, then

$$W \propto G^2 \propto (BS)^2 \propto 1/P$$

where BS is belt size and P is the productivity.

S. I. Salem
California State University
1/22/81 *Long Beach, California*

Physics and geometry

The relationship between physics and geometry, discussed in the letter of Robert Hermann in November (page 11) and the article of C. N. Yang in June (page 42), is interestingly illuminated by considering the article on