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POLARIZED ELECTRONS, VARIABLE MASS, AND ELECTROMAGNETIC RADIATION

by

Ralph Sansbury

The hypothesis is advanced that the electron is susceptible to polarization and that the apparent magnetic force of a moving electron is attributable to polar moments of the electron. A force-at-a-distance theory of electromagnetic radiation is derived from the hypothesis based on the variable capacitances of the moving electrons in the receiving antenna as a function of distance from the sending antenna. Other implications proposed: the photoelectric effect as a resonance phenomenon; hydrogen emission frequencies as the average in each case of orbital frequencies delimiting a specific orbital transition; the circumvention of the problem of a moving electron exerting a delayed force on itself. Support is given in terms of an experiment involving a variable resistance receiver antenna with adjustable reactance and reinterpretations of well known experiments of the past.

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letters

continued from page 15

spent a year at Argonne (1975-76) during the initial phases of our work and has returned to Argonne as a Summer Visitor in each subsequent year. His contributions to this long-term collaboration have been of crucial importance in the progress of our work. In addition to participating extensively in the experimental program, Vager has played a central role in developing a theoretical understanding of the results. I very much regret the omission of his name in your article and hope that publication of this letter will serve to correct the error.

DONALD S. GEMMELL
Argonne National Laboratory

6/6/79

Target designer

I was very pleased to see Rex Booth's ingeniously conceived and executed high-current target for production of high-intensity D-T neutrons on the cover of PHYSICS TODAY for April. That was well-deserved recognition for innovative effort on Rex's part, which extends over more than a decade. But by the same token, I was keenly disappointed to see no reference to Rex Booth's name whatsoever!

His role in the development of that target is attested to by a long list of publications covering the evolution of the design you pictured on the cover.

LAWRENCE CRANBERG
Austin, Texas

5/8/79

Soviet regulations

Our organization feels that a comment by Benjamin Levich (May, page 114) that visitors to the USSR should not violate Soviet law by bringing in religious books should be more fully explained.

Personal religious books and items for the tourist's use can be brought in. Visitors should be aware that they may be told they are violating Soviet law when they are not, and should make an effort to know something of the regulations before they leave for the USSR.

GLENN RICHTER
*Student Struggle for Soviet Jewry
New York, N.Y.*

5/28/79

Association: Omega

In bed a million fragmentary things
the rolling, discontented surf
lashing its whip, unintelligible
somewhere a radio scraping the air,
half-words, birdsong,

humming to itself
machinery in the night
skirting my intelligence, too fast
for sorting, ushered down to the general
din, the accepting sea of noise
4° Kelvin

the static singing of the universe,
the music of the spheres

struck up
with the Big Bang,
time's explosion,
four odd billion years
ago, when undifferentiated matter
splintered into multiplicity,

an overtone still waiting in the air

reminding us
of our reception
at the end

when everything is coiled back down
into the primal fury
of degenerate matter

even light, the life-
blood of the universe,
impeded in its flow,
coagulating in the absolute
zero of the blue

a bruise where nature stood,
the grave of former worlds

DAVID PAYNE
Kill Devil Hills, North Carolina

Science for developing nations

With reference to Michael Moravcsik's guest comment (May, page 9), I would like to pose a question in a devil's advocate vein. Namely why should the whole world be modeled according to US and Northern Europe's idea of development? Even within the lofty confines of pure science it seems arrogant for our generation to try to maximize exploitation of brain power everywhere. We know what the same type of initiative can be regarding other types of exploitation! Are we right in our philosophy? Perhaps the preservation of resources via the "underutilization of the available human brainpower" that Moravcsik decries goes hand in hand with the preservation of vast natural resources such as the Amazonian forests or the North Canadian supply of fresh (uncontaminated?) water as "natural selection" mechanisms to ensure the survival of the human race beyond the decline of today's "advanced world" whenever that happens.

E. J. ANSALDO
Saskatoon, Saskatchewan

5/25/79

THE AUTHOR REPLIES: Ansaldo's question is one that is often asked by people of certain persuasion in the scien-

tifically advanced countries. Significantly, the question is almost never asked in the developing countries themselves.

I believe that the decision of whether science and technology should be built up in the developing countries rests with people in the developing countries, and not with people in the countries which already have science and technology. Once we accept this premise, there is little doubt that strenuous efforts must be made to help the developing countries with their efforts of creating science and technology indigenously, since these countries have indeed made the unequivocal decision of wanting science and technology. This fact emerges from the statements of political leaders, from conversations with ordinary citizens, as well as from any other available source. To these countries it appears, rightly or wrongly, that having indigenous science and technology is a necessary (though perhaps not sufficient) condition for ending "economic colonialism," for attaining the appropriate amount of political power in the world, for eliminating feelings of inferiority in social, cultural, and other realms, and for assuring that the country has full standing among the nations of the world.

There have been a number of specific instances recently when people with An-

saldo's point of view tried to withhold something in science and technology from the developing countries, arguing that these countries should be "saved" from the "terrible situation" the scientifically advanced countries got themselves into. Even though there is no question in my mind that such arguments were advanced in completely good faith, and with utmost sincerity, they appeared from the vantage point of the developing countries as sure signs of "neocolonialism" in which the world elite wants to prevent the masses of the world from attaining equality and parity. It must be remembered that the present negative view of science and technology is a characteristically "Western" phenomenon, and, again rightly or wrongly, the rest of the world continues to regard science and technology as representing an immense amount of "good" with occasional tinges of "bad." People like Ansaldo are welcome to attempt to "reeducate" the rest of the world in this respect; but until they are successful, their pleas for withholding science and technology from the presently inactive three-quarters of the world have little if any credence.

MICHAEL J. MORAVCSIK
University of Oregon

6/19/79

Correction

June, page 25—in "Physics of rotating nuclei" by Aage Bohr and Ben R. Mottelson. The blue lines on figure 4b and c appeared misaligned. They should have appeared as shown here, with the line whose slope is $\hbar\omega_c$ appearing as the tangent of the S- and g- bands in figure 4b and with $\hbar\omega_c$ appearing as the intersection of the S- and g- bands in figure 4c.

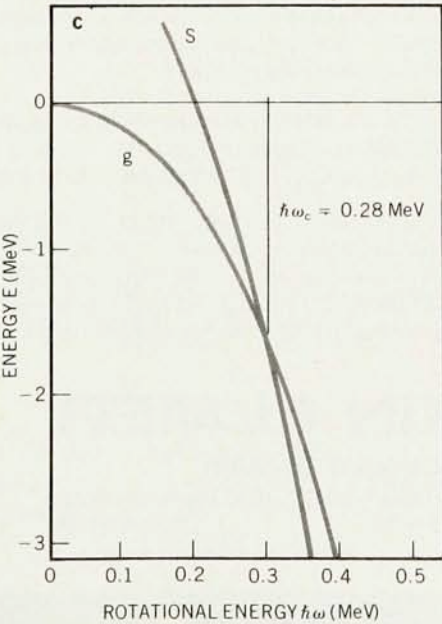
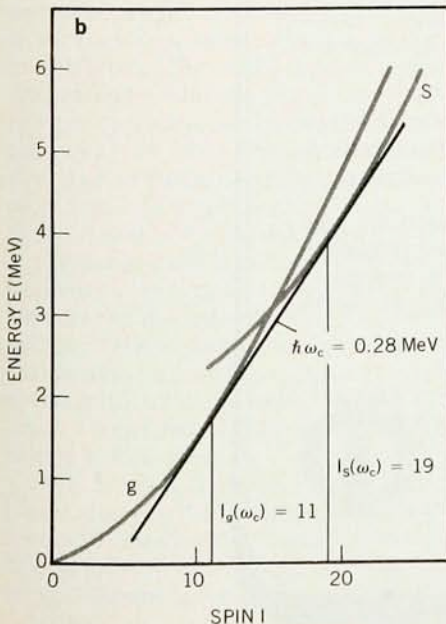
The label "g-band" in figure 5 should refer to the base-line (the dashed white

line in the figure) of the measurements.

In figure 7 the blue line is a fitted line whose slope determines an effective moment of inertia corresponding to $2J/\hbar^2 = 142 \text{ MeV}^{-1}$.

In the text on page 30 in the left column the moment of inertia of a rigid sphere should be given as $2J_{\text{rig}}/\hbar^2 = 124 \text{ MeV}^{-1}$, which is slightly less than the measured 142 MeV^{-1} .

The editors regret these errors. □



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