

letters

roles of quasars and on the behavior of black holes at singularities were my concentration from 1971-1975. My ideas did not receive acceptance readily in this area, and I can say (in all humility) that I was a decade ahead of then-published material in journals. I now concentrate on quantum field theory and extensions on several complex variables, keeping up with developments thanks to my membership in APS and AMS. I am not unique—there are thousands like me throughout the US and the world who are “scientists by night.”

However, we do lack one very crucial ingredient for truly serious results—interaction with fellow scientists. How well would Einstein have done without his “Akademie” meeting every Tuesday evening to discuss Mach, Poincaré, Lorentz, Maxwell and so on? Would he have published in 1905 without the help of his former classmate and lifelong friend Marcel Grossman? I think not.

I propose a national organization, affiliated with APS, called the Society of Non-Affiliated Physicists (SNAP) and will gladly help to develop this needed organization.

If interested, please write to:

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6/83

Credit for coauthor

A news story in May (page 17) mentioned my work on density inhomogeneities in the new inflationary universe, but it failed to mention my coauthor, So-Young Pi. While she was not present at the Nuffield Conference, she did collaborate in these calculations.

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6/83

Non-proliferation treaty

In June, Harold Lewis writes (page 98): “he [Rau] states that ‘an essential component’ of the [non-proliferation] treaty is a commitment on the part of the nuclear powers to stop production. My copy of the treaty contains no such item.”

In the preamble to this treaty, the states concluding the treaty declare “their intention to achieve at the earliest possible date the cessation of the nuclear arms race and to undertake effective measures in the direction of nuclear disarmament.” Two other clauses have a similar tone.

In the main text of the treaty, one of eleven clauses reads: “Each of the Parties to the Treaty undertakes to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament, and on a treaty on general and complete disarmament under strict and effective international control.”

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7/83

Uranium tailings hazard

It is unfortunate that I have only now read the article in the December 1982 issue by Robert Pohl, but comment still seems required. I will limit myself primarily to his section on uranium mill tailings (page 41), although some of the considerations are directly transferable to other parts of his presentation.

The layman starts with the preconception that without human intervention the environment is free of radiation and of radioactive materials. In fact, uranium is fairly evenly distributed in soil and rock at some 5-8 parts per million (less in Illinois black loam, more in the mountain rock near Pohl's Ithaca), and thorium is on average about four times as abundant. Pohl's presentation not only fails to address this fundamental fact, but in his discussion of the mill tailings he seems to carry along the popular fallacy that only after mining and processing does the radioactive content come into being.

The activity in the tailings existed in the ore, which in turn was located in the ground. Most current mining is in open-pit operations, which means it comes from relatively shallow subsurface locations. Ore currently being exploited is frequently considerably leaner even than Pohl's 0.1%, by as much as a factor of ten and more. We are thus talking about material that starts at factors of tens, not hundreds, and certainly not thousands, above universal background. But local background, in the plateau regions which are the site of current mining and milling operations, runs definitely above the average, so the difference from a random surface location in the area is even less.

Further, the ores are leached with sulfuric acid, to precipitate barium and other alkaline earth sulfates, and thus co-precipitating the radium isotopes. In this form the radium is effectively nonemanating, as anyone who has dealt with it in the laboratory can testify. This is in contrast to the naturally occurring state. The uranium in these ores was deposited from

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