for her early photon entanglement experiment, Bell and Freedman died without receiving a Nobel Prize for their work whose significance was indicated by the awarding of the prize to Aspect, Clauser, and Zeilinger.

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In the fascinating article "Chien-Shiung Wu's trailblazing experiments in particle physics" (PHYSICS TODAY, December 2024, page 28), the authors incorrectly describe the result of an experiment testing a prediction by John Wheeler.[1] They report that Ernst Bleuler and Helmut Bradt at Purdue University measured the ratio of perpendicular to parallel polarization of gamma rays emitted from the decay of an electron–positron pair as 2.1 ± 0.64, a relatively large uncertainty. That ratio was for one run; the published result combining all of their measurements was actually a much more respectable 1.9 ± 0.3.[2] Given that Wheeler predicted a maximum ratio of 1.100 and later theorists[3,4] fixed the error and calculated a ratio of 1.7 for the configuration used by Bleuler and Bradt, the two could at least be given credit for showing that Wheeler's math was wrong and that the new predictions were pretty good.

By adroitly utilizing the latest in scintillation detector technology instead of Geiger counters, Wu and her graduate student Irving Shaknov[5] obtained 2.04 ± 0.08, where the improved theory predicted 2.00 for their configuration. The scientific community accepted this as confirmation of Wheeler's suggestion that the electron–positron pairs decay from a state with zero angular momentum. Wheeler makes no mention of entanglement, whose significance became apparent much later.

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► **Kam, Zhang, and Feng reply:** With respect to Robert Cahn's comments, we agree that John Bell and Stuart Freedman should be acknowledged, just as Chien-Shiung Wu should be, for their contributions to the body of work that eventually earned Alain Aspect, John Clauser, and Anton Zeilinger a Nobel Prize. We wanted to draw attention to Wu and Irving Shaknov being the first to conclusively verify photon entanglement. Considering that Wu and Shaknov's experiment was done only about 15 years after Albert Einstein, Boris Podolsky, and Nathan Rosen first brought the concept of quantum entanglement to light in what's known as the EPR paper, our personal perspective is that it was worthy of a Nobel Prize.

With respect to Stephen Durbin's comments, we agree that the experimental efforts made by Ernst Bleuler and Helmut Bradt should not be dismissed. John Wheeler made no mention of "entanglement" in his paper, and neither did Wu and Shaknov in their letter. When the latter published their results in 1950, the word was not yet a common scientific term. To perform an experiment like that 75 years ago required Wu to be well ahead of her time. We think that she had the concept of entanglement in her mind.

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Comments on "Careers by the numbers"

The October 2024 careers issue of PHYSICS TODAY missed the mark in more than one way. In Richard Fitzgerald's otherwise excellent article "Careers by the numbers" (page 30), the figure showing new physics PhDs' starting salaries (page 35) confusingly has federally funded R&D centers (FFRDCs) separate from university-affiliated research institutes (UARIs). It lumps the former with government labs and the latter with universities. Both FFRDCs and UARIs are nonprofit entities that are sponsored by various government agencies and perform a broad range of research. But the mission-driven research at several FFRDCs, such as Los Alamos National Laboratory and Sandia National Laboratories, is much closer in nature to the work at UARIs, whereas the discovery science research at other FFRDCs, such as Oak Ridge National Laboratory and Argonne National Laboratory, parallels university-based research.

More egregious, however, was that the other two features in the careers issue focus mostly on academic careers. As Fitzgerald's article lays out, the vast majority of new recipients of physics bachelor's degrees and a majority of new recipients of physics PhDs do not find employment in academia. Why, then, ignore the many and important other ways that physicists contribute to society and the economy? This careers issue contributes to maintaining the myth that the only proper career path for physicists is one that is university based.

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