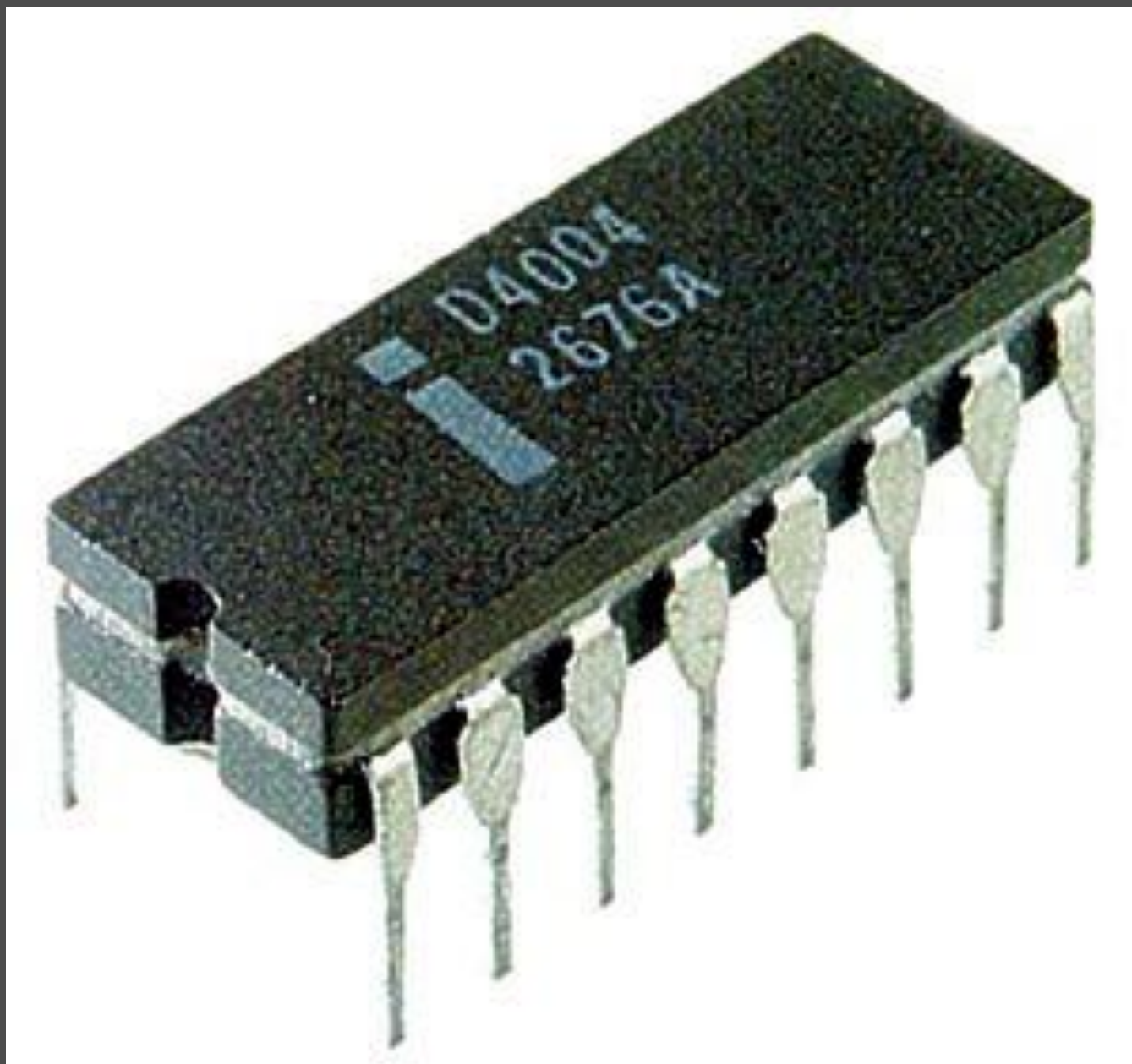
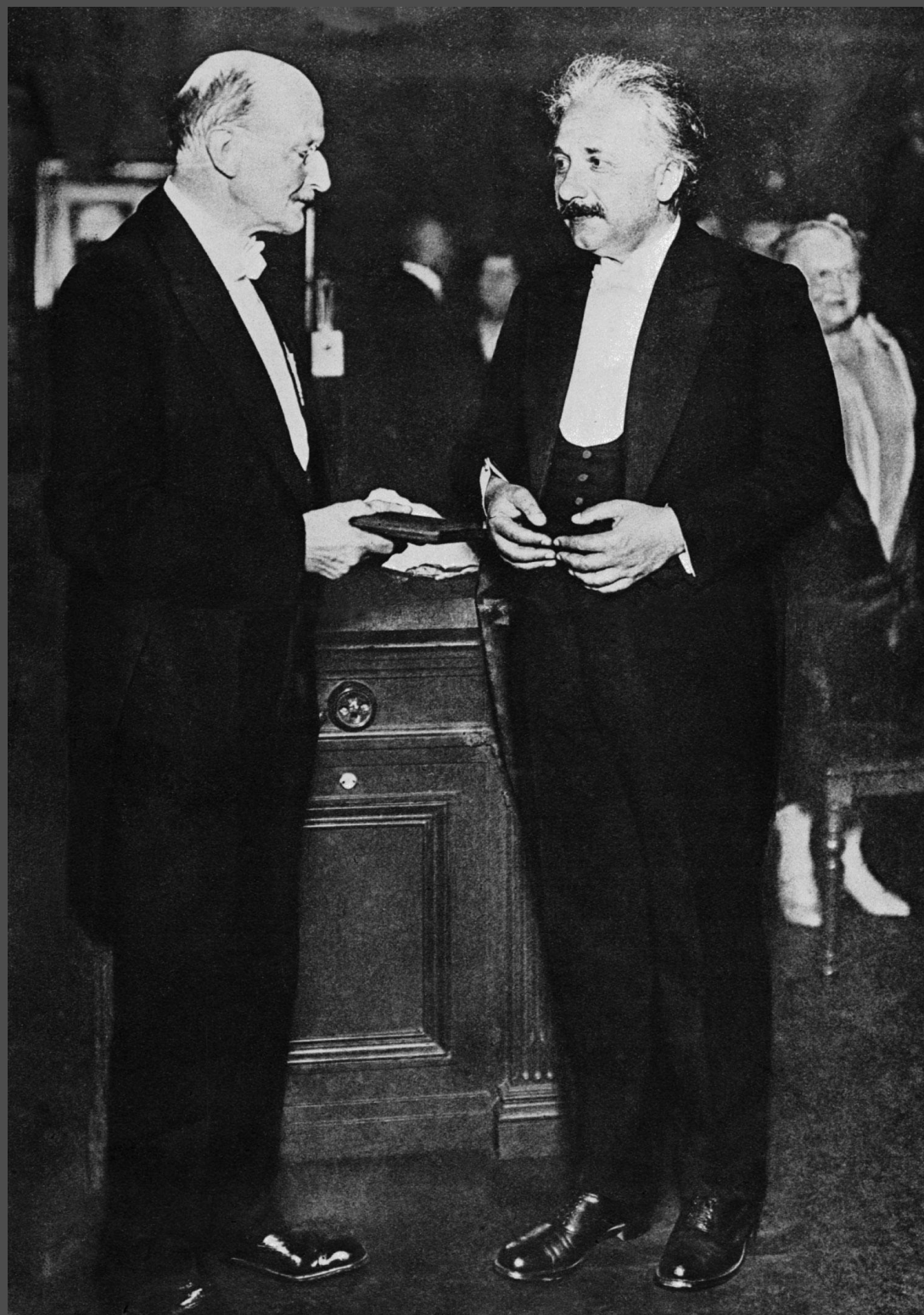


La Innovación en IT como Reto para Las Empresas Mexicana





$$E = h\nu$$

frequency of radiation, sometimes written as f
giving expression $E = hf$.

Quantum energy
of a photon.

$h = \text{Planck's constant} = 6.626 \times 10^{-34} \text{ Joule}\cdot\text{sec} = 4.136 \times 10^{-15} \text{ eV}\cdot\text{s}$





100 Years of Quantum Mysteries

[Preview]

As quantum theory celebrates its 100th birthday, spectacular successes are mixed with persistent puzzles

By Max Tegmark and John Archibald Wheeler

“In a few years, all the great physical constants will have been approximately estimated, and . . . the only occupation which will then be left to the men of science will be to carry these measurements to another place of decimals.” As we enter the 21st century amid much brouhaha about past achievements, this sentiment may sound familiar. Yet the quote is from James Clerk Maxwell and dates from his 1871 University of Cambridge inaugural lecture expressing the mood prevalent at the time (albeit a mood he disagreed with). Three decades later, on December 14, 1900, Max Planck announced his formula for the blackbody spectrum, the first shot of the quantum revolution.

This article reviews the first 100 years of quantum mechanics, with particular focus on its mysterious side, culminating in the ongoing debate about its consequences for issues ranging from quantum computation to consciousness, parallel universes and the very nature of physical reality. We virtually ignore the astonishing range of scientific and practical applications that quantum mechanics undergirds: today an estimated 30 percent of the U.S. **gross** national product is based on inventions made possible by quantum mechanics, from semiconductors in computer chips to lasers in



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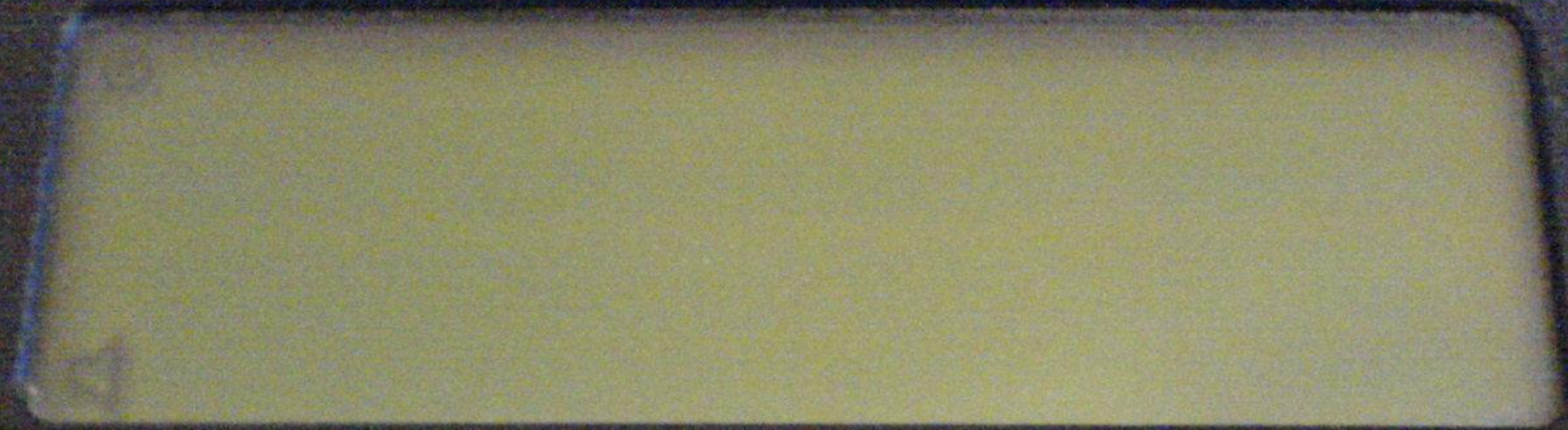




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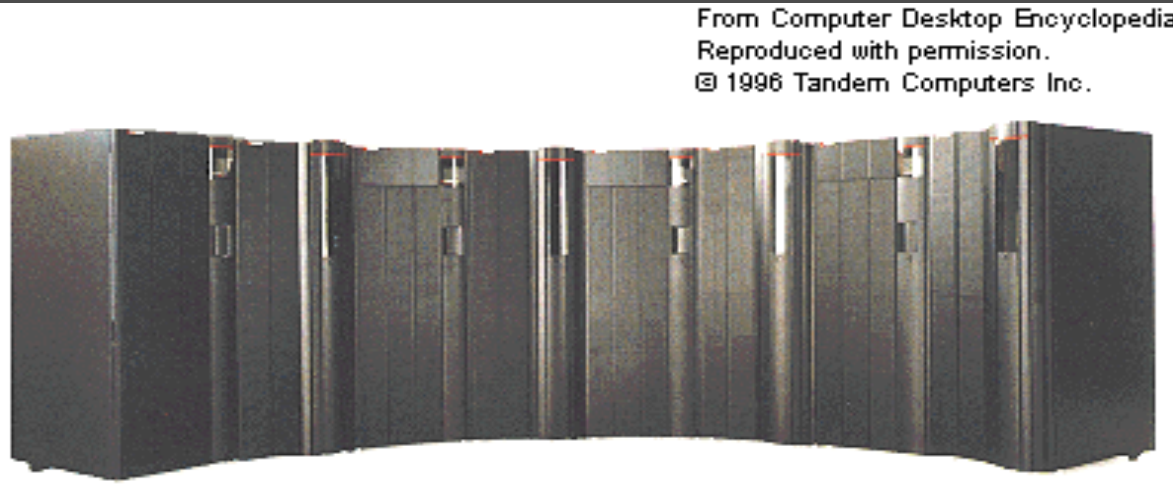
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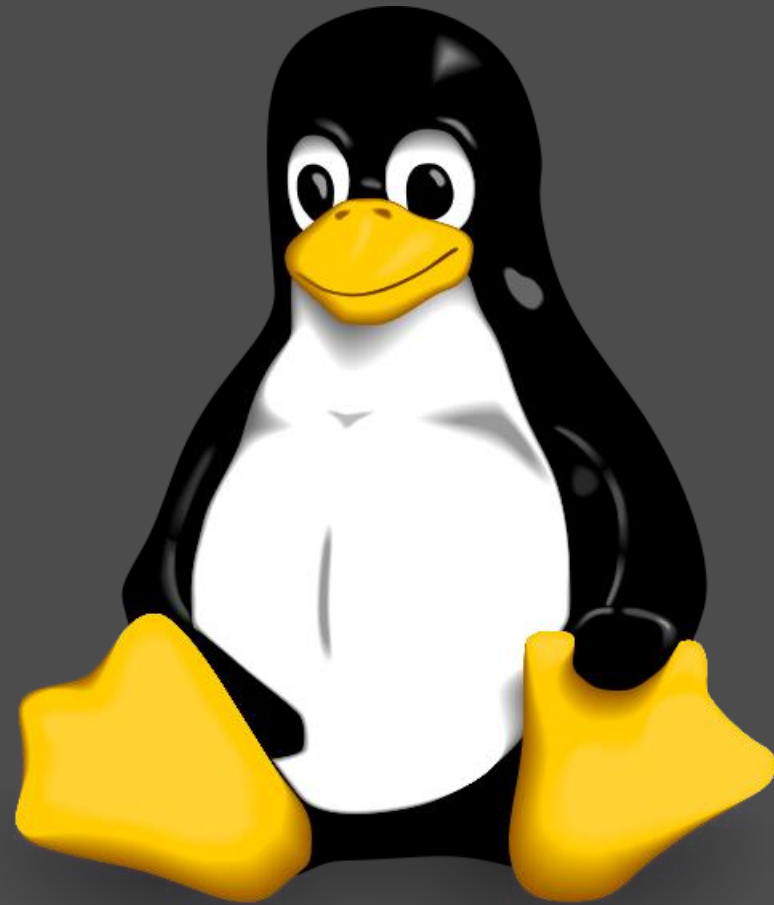




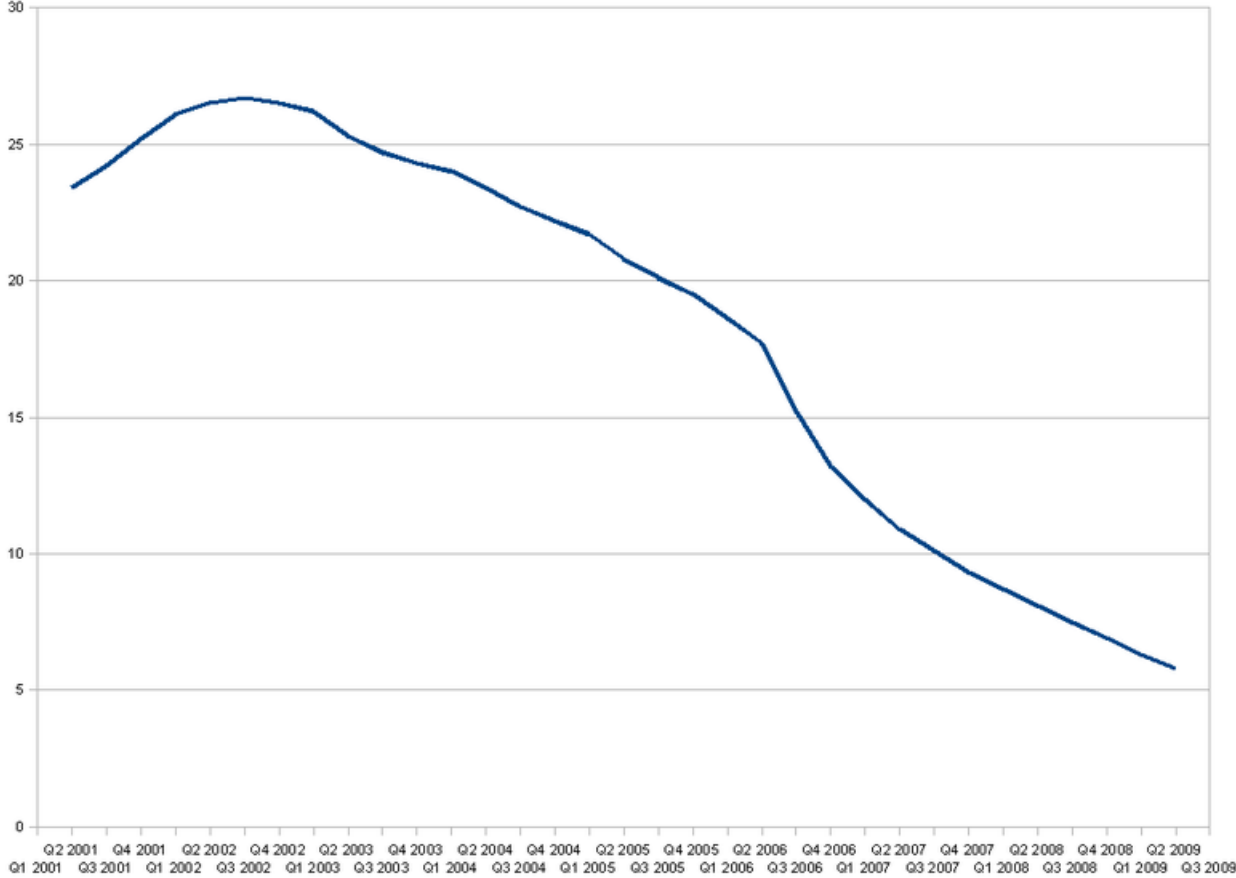


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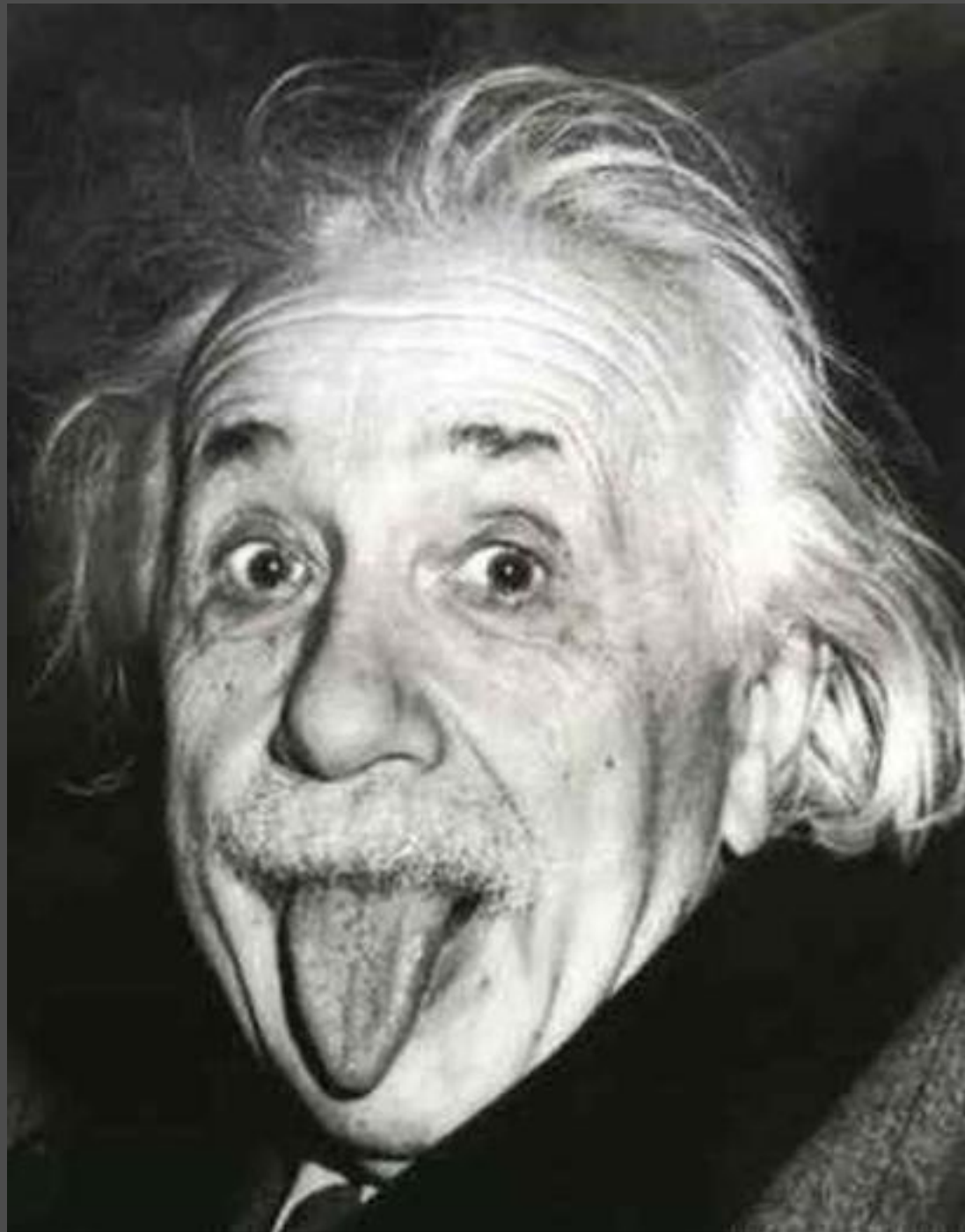
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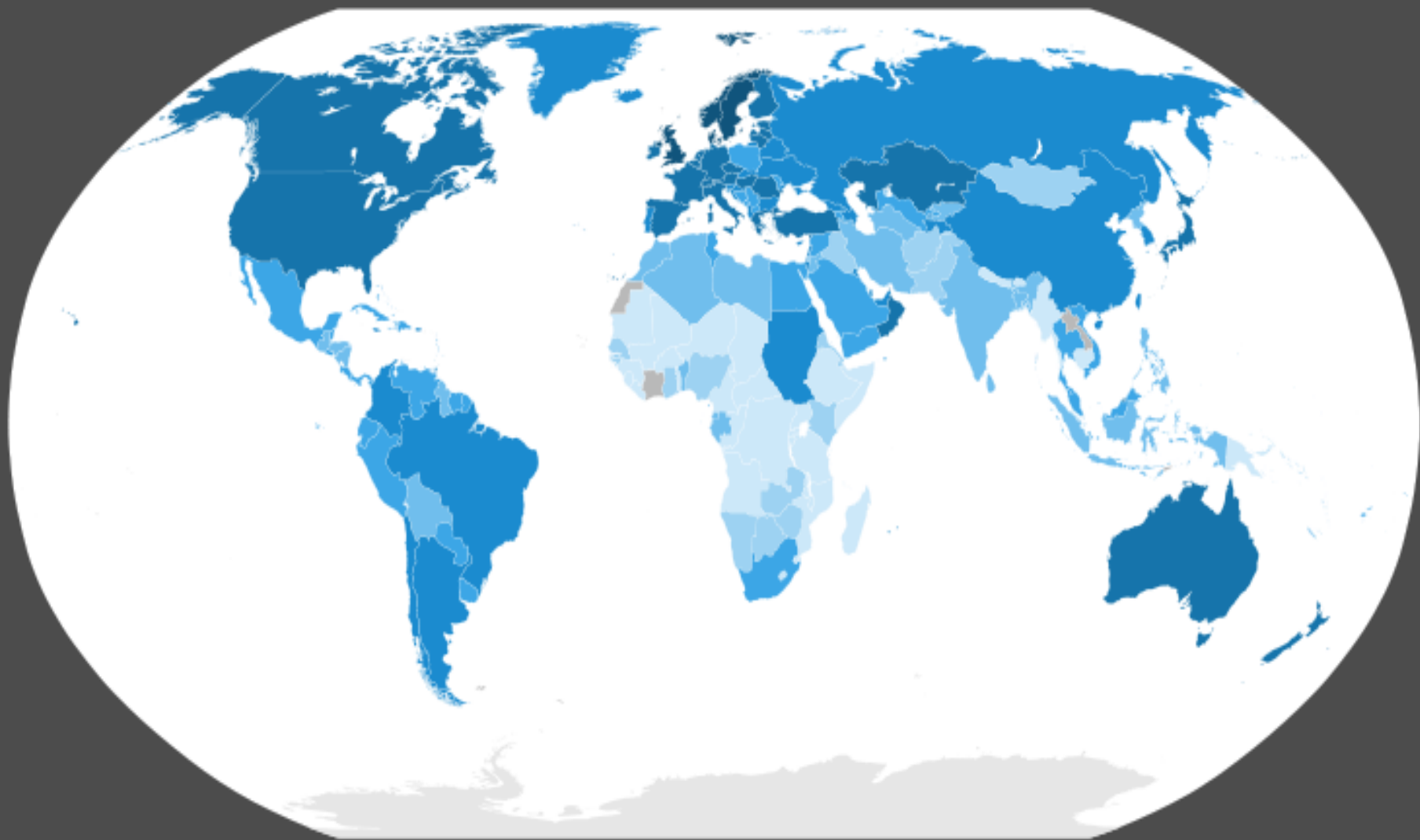














Record-Speed Wireless Data Bridge Demonstrated: Takes High-Speed Communications the 'Last Mile'

ScienceDaily (Feb. 27, 2012) — A team of researchers in Germany has created a new way to overcome many of the issues associated with bringing high-speed digital communications across challenging terrain and into remote areas, commonly referred to as the "last mile" problem. The researchers developed a record-speed wireless data bridge that transmits digital information much faster than today's state-of-the-art systems.

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These unprecedented speeds, up to 20 billion bits of data per second, were achieved by using higher frequencies than those typically used in mobile communications -- the wireless bridge operates at 200 gigahertz (GHz) (two orders of magnitude greater than cell phone frequencies).

The team will present their research at the Optical Fiber Communication Conference and Exposition/National Fiber Optic Engineers Conference (OFC/NFOEC), taking place March 4-8 at the Los Angeles Convention Center.

"An inexpensive, flexible, and easy-to-implement solution to the 'last mile' problem is the use of wireless technology," explains Swen Koenig, a researcher at Karlsruhe Institute of Technology's (KIT) Institute of Photonics and Quantum Electronics, who will present the findings at OFC/NFOEC. "Instead of investing in

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