Video Article

An Interview with Nobel Laureate Douglas Osheroff, Physics 1996

Douglas Osheroff¹

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DOI: [doi:10.3791/1540](https://doi.org/10.3791/1540)

Keywords: Physics, Issue 29, Nobel Laureate, Douglas Osheroff, Superfluidity, Helium-3, Superconductivity

Date Published: 7/7/2009

Citation: Osheroff, D. An Interview with Nobel Laureate Douglas Osheroff, Physics 1996. *J. Vis. Exp.* (29), e1540, doi:10.3791/1540 (2009).

Abstract

At extremely low temperatures, certain materials conduct electrical currents without resistance – a phenomenon called *superconductivity*. An analogous state occurs in extremely low-temperature fluids, in which molecules flow without internal friction or resistance. Such a state, termed *superfluidity*, was predicted for helium-3 shortly after the Bardeen, Cooper, and Schrieffer (BCS) theory of 1957 explained the superconductivity of metals. The search for helium-3 superfluidity commenced; it continued for about ten years without success, and was all but abandoned by the time Douglas D. Osheroff began his graduate studies at Cornell University. "The general wisdom was that the superfluidity of helium-3 was a pipe dream of the theorists," says Osheroff. "But in fact, it did occur." In 1972, Osheroff – together with David M. Lee and Robert C. Richardson – demonstrated the transition of helium-3 to a superfluid state at temperatures near absolute zero (-273°C). Twenty-four years after their discovery, Osheroff and colleagues won the Nobel Prize in Physics. Osheroff's scientifically inquisitive nature developed long before his landmark discovery. "A lot of people did crazy things when they were young" says Osheroff, whose wild experimentation including building a 100,000-volt X-ray machine as a teenager. Now as a faculty member at Stanford University, Osheroff stresses the importance of mentoring undergraduates to get them excited about science, and to guide them on what to do next. As for graduate school, Osheroff says that "it doesn't matter what is it that you study as a graduate student – the important thing is learning how to study."

Video Link

The video component of this article can be found at <https://www.jove.com/video/1540/>

Disclosures

The authors have nothing to disclose.