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Russ Donnelly's research at the University of Oregon

JOSEPH NIEMELA, The Abdus Salam ICTP

Coming to the University of Oregon in 1966, Russ Donnelly built up a strong research activity having two threads within hydrodynamics: the flow of ordinary fluids and that of superfluids. Vorticesquantized and classicalwere at the heart of his research. His 1991 book Quantized Vortices in Helium II, by now a standard reference for researchers and students, elucidated some of it. To produce vortices Russ brought from Chicago two enormous rotating tables, based on 1-m diameter industrial lathe chucks obtained from General Motors. They were also used for classical systems such as Taylor-Couette flow (to generate strong Coriolis forces) and thermal convection, where the properties of rotationincluding early experimental investigations of the Kuppers-Lortz instabilitywere studied. Another common thread in his research was the modulation of control parameters leading to Stokes layer effects, both thermal and viscous. In the early 90s, Russ and his group turned their attention to cryogenic turbulence in normal and superfluid systems, creating what has now become a small industry and a well-established sub-field within low temperature physics.