Quantum turbulence is the name given to the turbulent flow—the chaotic motion of a fluid at high flow rates—of quantum fluids, such as superfluids which have been cooled to temperatures close to absolute zero. The turbulence of classical fluids is an everyday phenomenon, which can be readily observed in the flow of a stream or river. When turning on a water tap, one notices that at first the water flows out in a regular fashion (called laminar flow), but if the tap is turned up to higher flow rates, the flow becomes turbulent (chaotic). In quantum fluids, this transition to turbulence is more complex.

Turbulence of superfluid $^4$He was discovered in the mid-1950s. Since then, considerable experimental and theoretical effort has been devoted to the understanding of thermal counterflow.