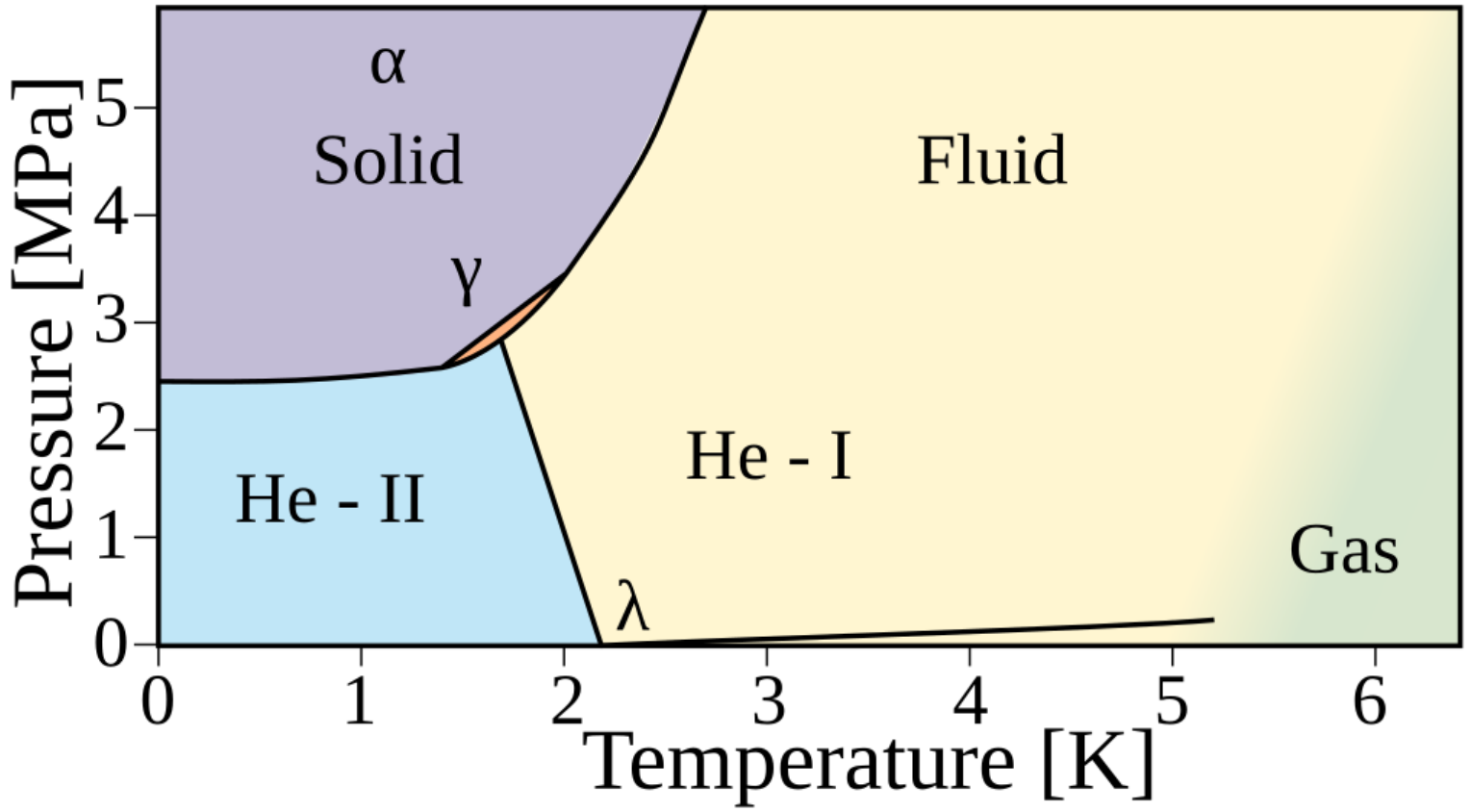
Superfluidity

Phase Diagram of Helium-4

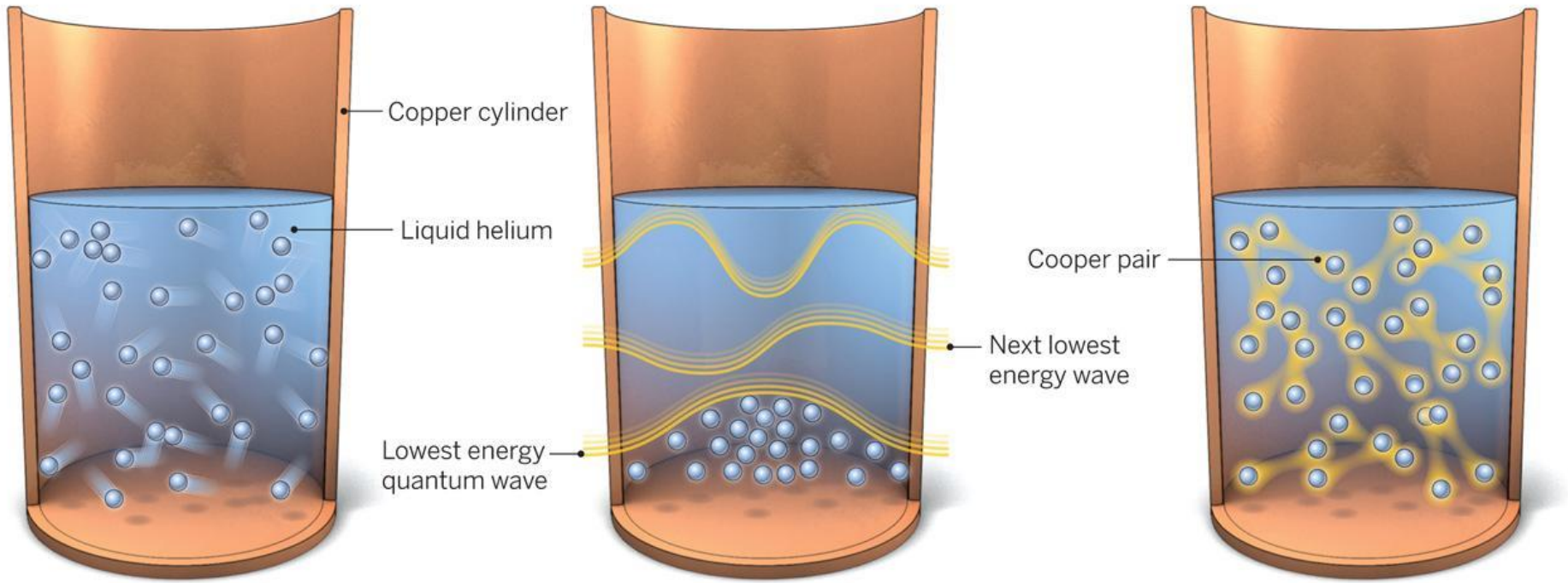


By Д.Ильин: vectorization - Phase diagram of Helium-4.png by Tretyak

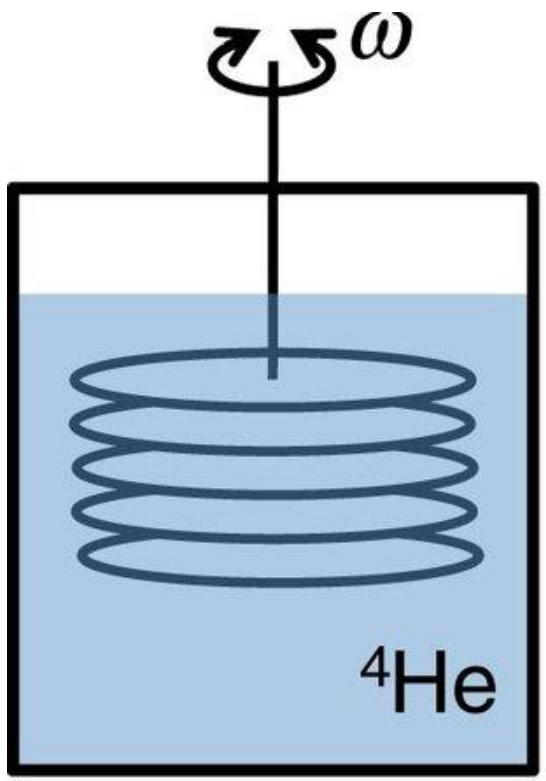
Catch the wave

ILLUSTRATION: C. BICKEL/*SCIENCE*

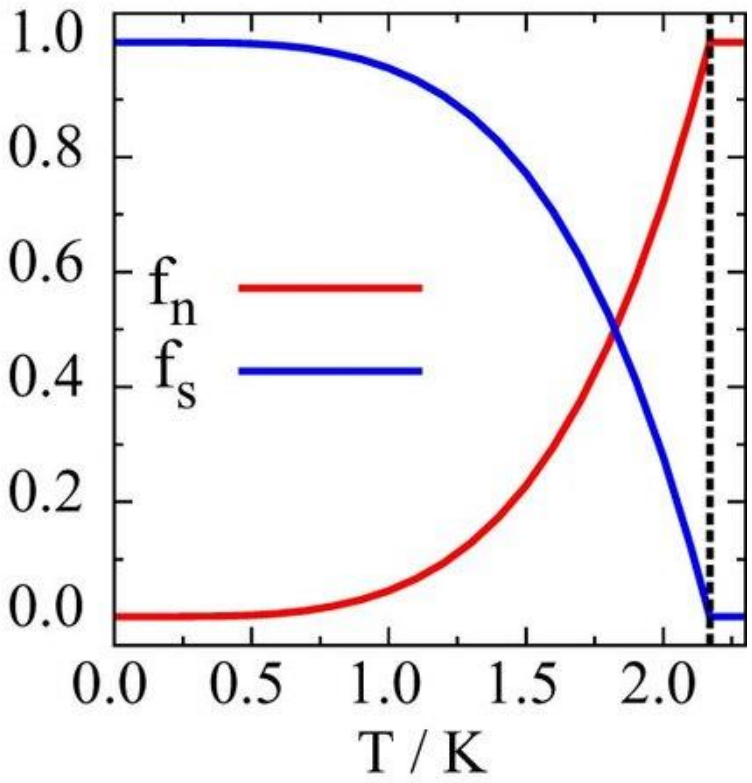
The presence of a macroscopic quantum wave gives superfluid helium bizarre properties. In a normal liquid, atoms jumble together. In superfluid helium-4, atoms crowd into the same quantum wave, and in superfluid helium-3 atoms pair and the pairs form a quantum wave.



Andronikashvili Experiment

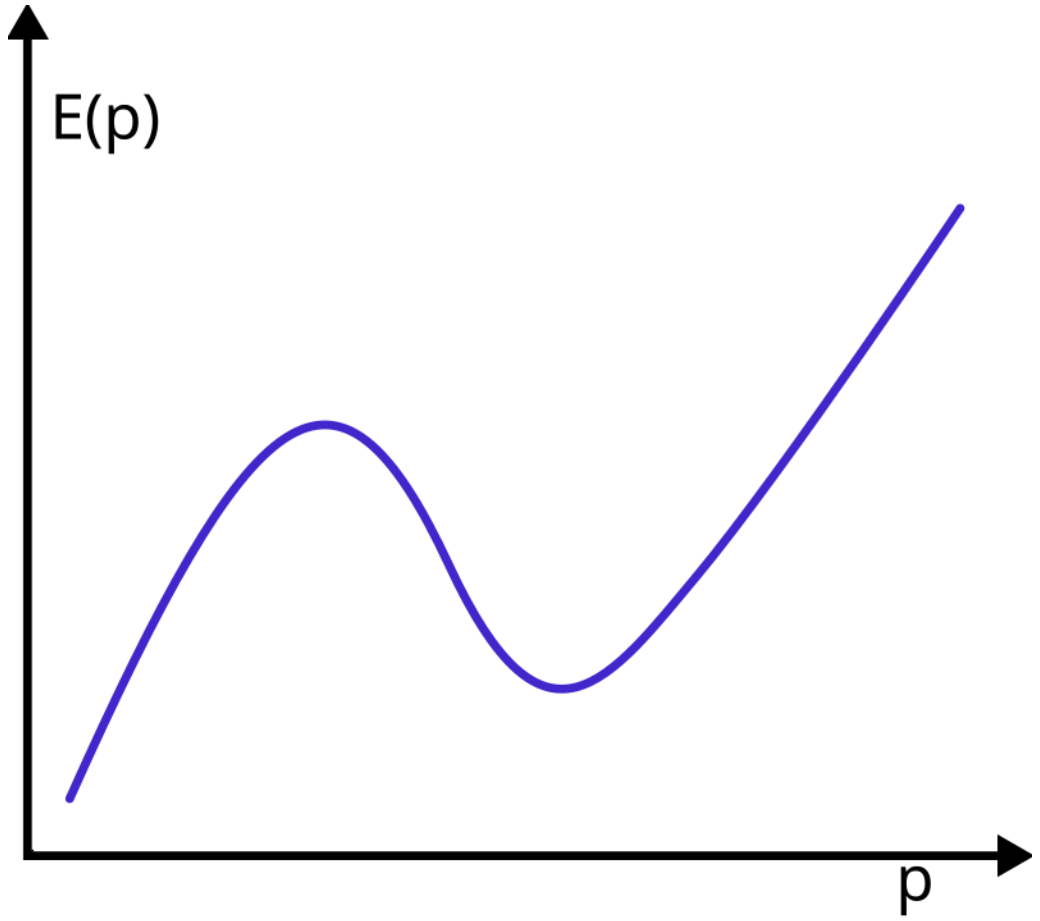


(a)

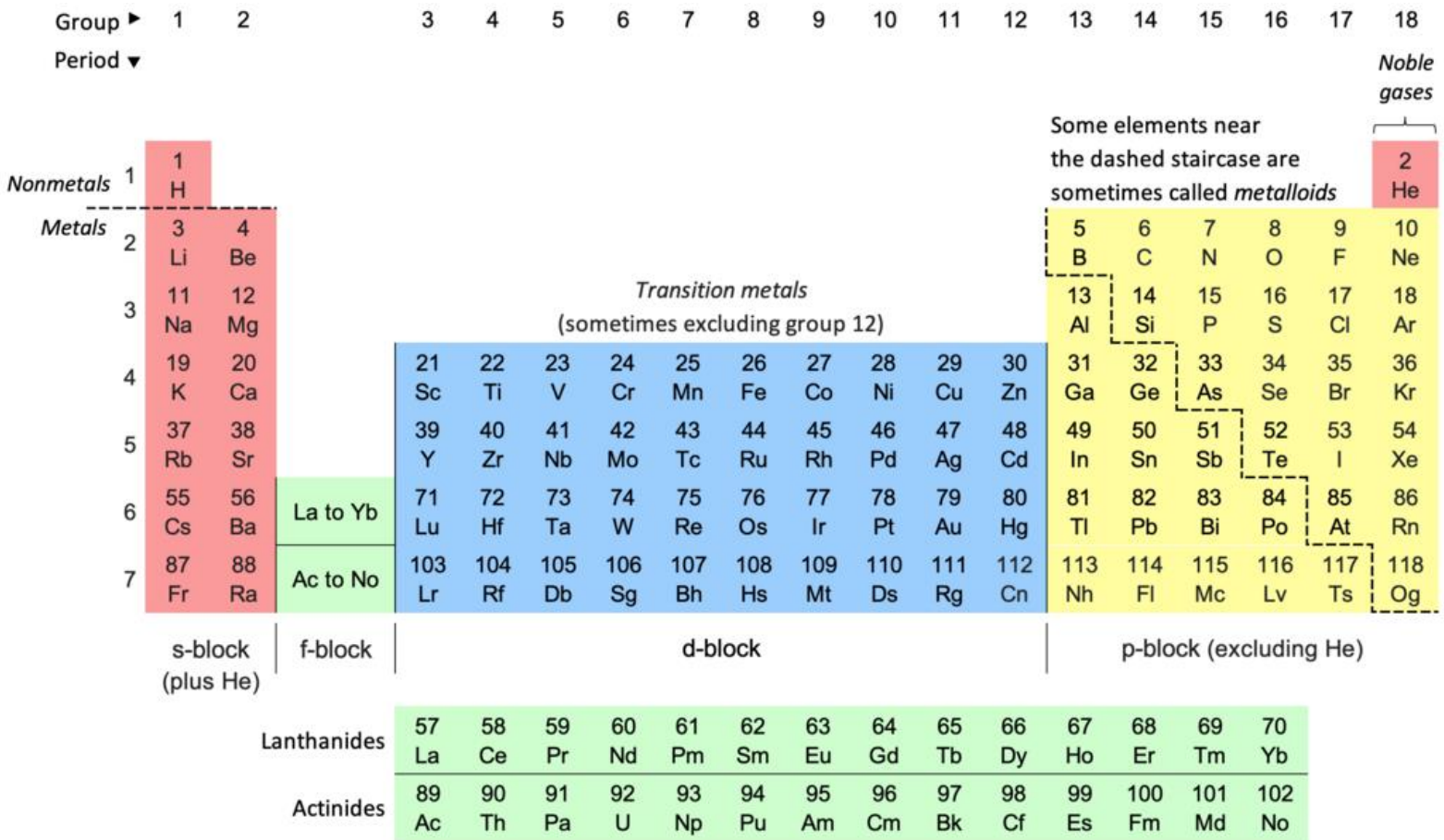


(b)

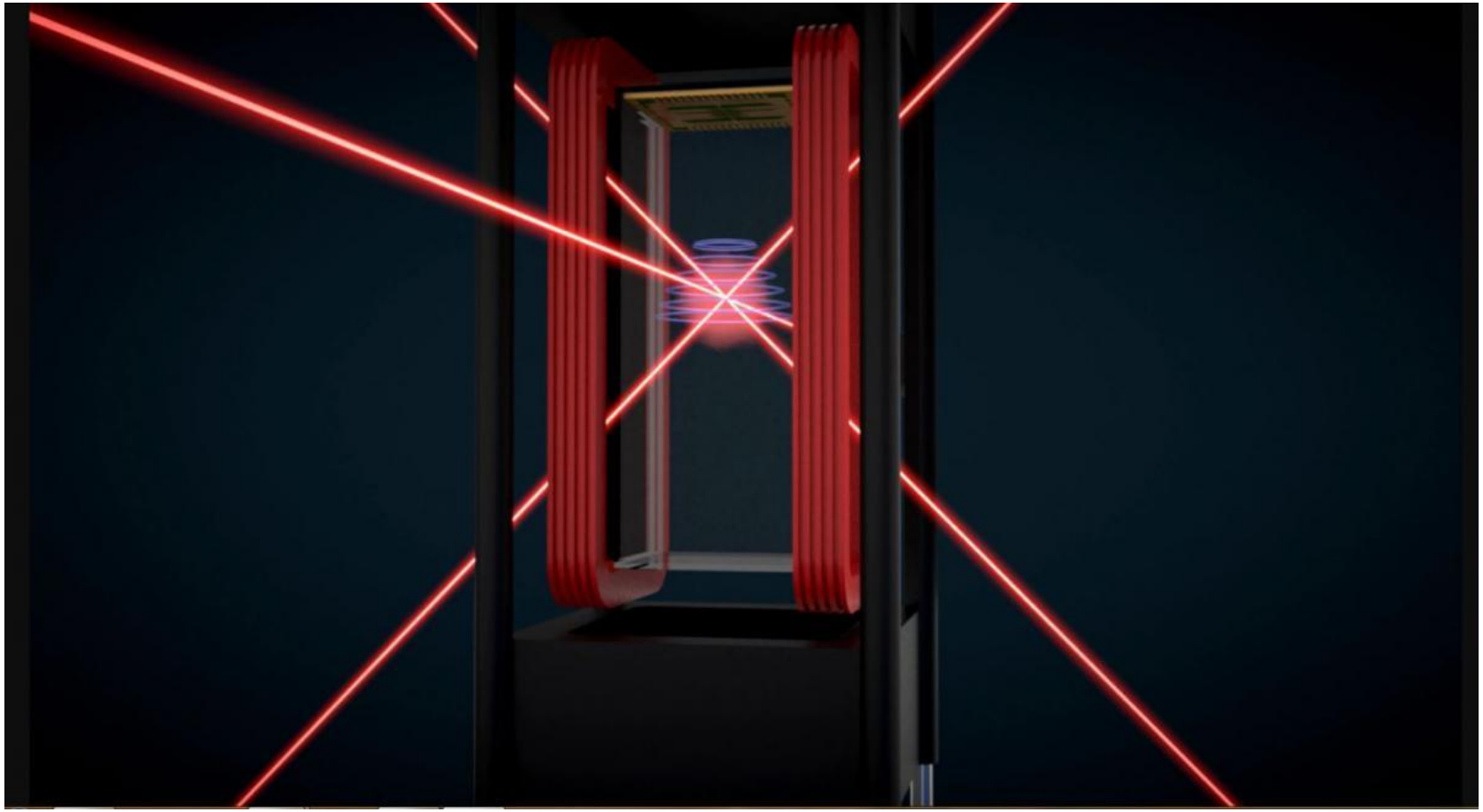
Elementary Excitations in Liquid Helium



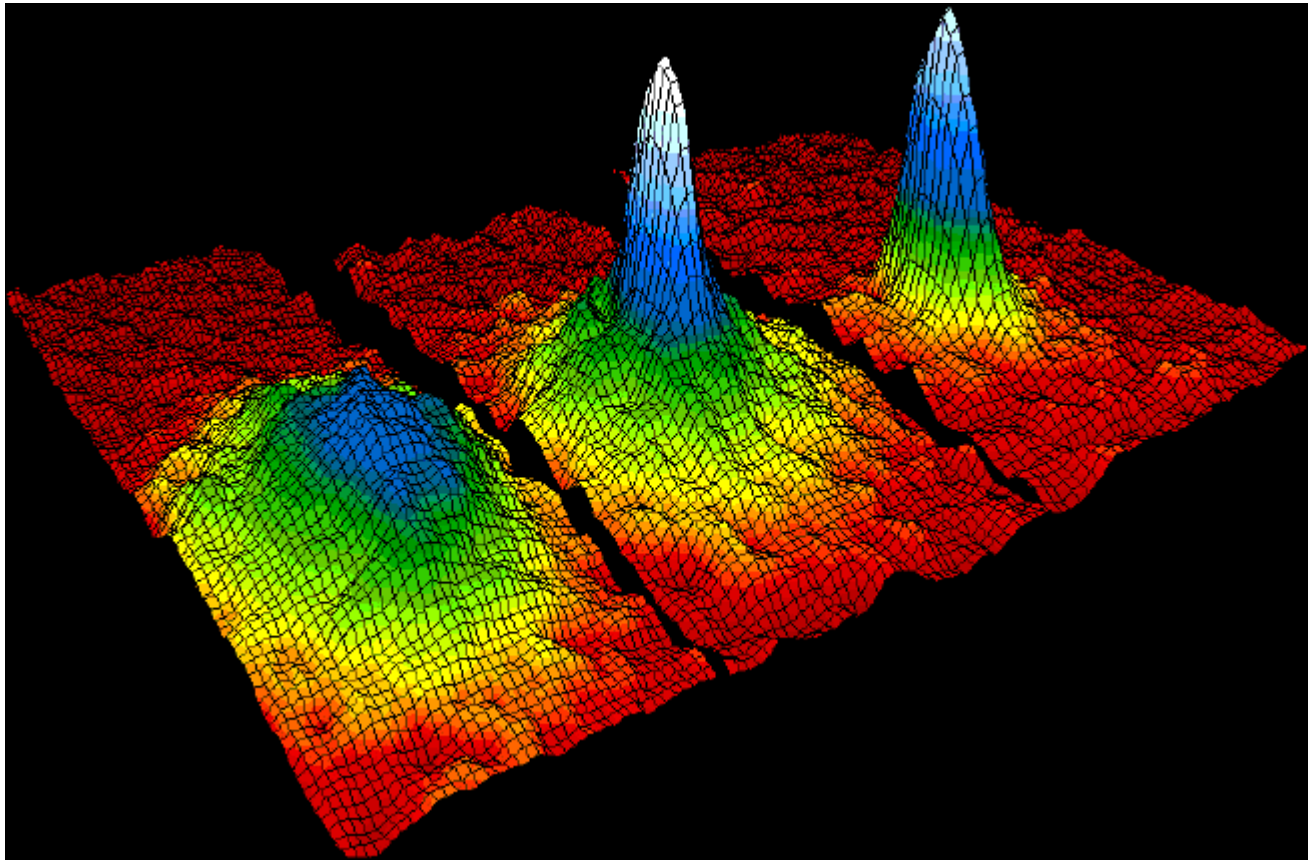
Dilute Cold Atoms in Traps



Laser Cooling



Emergence of the condensate



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Vortex Lattice in a Rotating Condensate