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The picture shows a cloud of cold $^87$Rb atoms held in a magneto-optic trap inside a vacuum chamber. The trap uses a combination of laser light and a spherical quadrupole magnetic field to cool the atoms to a temperature of less than one-thousandth of a degree above absolute zero, and simultaneously confine them to a small region of space. The laser light at 780 nm is constantly being absorbed and re-emitted by the trapped atoms. This resonance fluorescence is collected by a lens and captured on a CCD camera to 'see' the cloud. In the picture shown, there are more than $10^8$ atoms at a temperature of about 500 μK in a cloud of size 3 mm. Such atom traps are becoming increasingly important for experiments ranging from fundamental research in Bose-Einstein condensation and precision measurements to applications in atomic fountain clocks and nano-lithography.

(Submitted picture was taken by Umakant Rapol, Ajay Wasan and Vasant Natarajan, Department of Physics, Indian Institute of Science, Bangalore.)

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William Donald Hamilton
(1936 – 2000)
(Illustration by C Seema)

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