Slide Revision Example

The physics of BEC, cont. ← repeated from previous slide

When they turned off the trap, the gas remained coherent and moved as if it were a single macroscopic quantum particle, an "atom laser."] big block of text

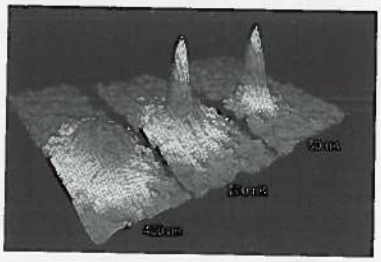
remove to save room →

Figure : The bosons' momenta after the trap is removed. (Atomic Lab)

Applications to interferometry, quantum computing, and more. ← Remember to say; don't need to write.

After the trap was turned off ← moved enough of text block up to reduce block size

BEC stayed coherent like a single macroscopic quantum particle. ← Now just 1 line



← bigger picture

Momentum is concentrated after release at 50 nK. (Atomic Lab) ← more descriptive caption

The mathematics of BEC

Heuristic of Gross and Pitaevskii, 1961: The cubic nonlinear Schrödinger equation (NLS) is a good phenomenological model of BEC.

$$i\partial_t\varphi = -\Delta\varphi + \mu|\varphi|^2\varphi.$$

Fruitful NLS research in hopes of understanding BEC: big idea being dispersion vs. nonlinearity.

But can we rigorously connect the physics and the math?

Yes, via statistical mechanics...

] big block of text, underlined words redundant

← remember to say

The mathematics of BEC

Gross and Pitaevskii, 1961: a good model of BEC is the cubic nonlinear Schrödinger equation (NLS):

] "good": heuristic/phenomenological

$$i\partial_t\varphi = -\Delta\varphi + \mu|\varphi|^2\varphi$$

← bigger equation

Can we rigorously connect the physics and the math?

Yes, via statistical mechanics...