

## Bose Einstein Condensation Of Erbium Physics

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### **Bose Einstein Condensation Of Erbium**

At temperatures close to absolute zero, a cloud of about 70,000 erbium atoms forms a magnetic Bose-Einstein condensate. In a condensate, the particles lose their individual properties and...

### **First Bose-Einstein condensate of erbium produced**

Bose-Einstein condensation of erbium atoms and on the observation of Feshbach resonances in the region of low magnetic fields. We obtain pure optically trapped BECs of  $^{168}\text{Er}$  containing 7 104 atoms. The remarkably high efficiency of evaporative cooling in a standard optical dipole trap indicates favorable scattering properties of the

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## **(PDF) Bose-Einstein Condensation of Erbium**

At temperatures close to absolute zero, a cloud of about 70,000 erbium atoms forms a magnetic Bose-Einstein condensate. In a condensate, the particles lose their individual properties and synchronize their behavior.

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We report on the achievement of Bose-Einstein condensation of erbium atoms and on the observation of magnetic Feshbach resonances at low magnetic fields. By means of evaporative cooling in an optical dipole trap, we produce pure condensates of  $^{168}\text{Er}$ , containing up to  $7 \times 10^4$  atoms. Feshbach spectroscopy reveals an extraordinary rich loss ...

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## **[1204.1725] Bose-Einstein Condensation of Erbium**

Finally, we demonstrate the application of a low-field Feshbach resonance to produce a tunable dipolar Bose-Einstein condensate and we observe its characteristic d-wave collapse. We report on the achievement of Bose-Einstein condensation of erbium atoms and on the observation of magnetic Feshbach resonances at low magnetic field.

## **Bose-Einstein Condensation of Erbium - NASA/ADS**

Bose-Einstein condensation of photons in an erbium-ytterbium co-doped fiber cavity. Weill R(1), Bekker A(1), Levit B(1), Fischer B(2). Author information: (1)The Andrew & Erna Viterbi Faculty of Electrical Engineering, Technion, 32000, Haifa, Israel.

## **Bose-Einstein condensation of photons in an erbium ...**

In 2001 Eric Cornell, Wolfgang Ketterle and Carl Wieman were awarded the Nobel Prize in physics for producing the first Bose-Einstein condensates. The new condensate of erbium, now produced for the first time in Innsbruck, is an excellent model system for miming fascinating effects arising from long-range interaction.

## **Physicists Create a Condensate of Erbium**

In condensed matter physics, a Bose-Einstein condensate(BEC) is a state of matter(also called the fifth state of matter) which is typically formed when a gas of bosons at low densities is cooled to temperatures very close to absolute zero(-273.15 °C, -459.67 °F).

## **Bose-Einstein condensate - Wikipedia**

At temperatures close to absolute zero, a cloud of about 70,000 erbium atoms forms a magnetic

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## **First Bose-Einstein condensate of erbium: Quantum ...**

zero, a cloud of about 70,000 erbium atoms forms a magnetic Bose-Einstein condensate. In a condensate, the particles lose their individual properties and synchronize their behavior.

## **First Bose-Einstein condensate of erbium produced**

Time-of flight image of a thermal atomic erbium ensemble (left) and a Bose-Einstein condensate (right) Erbium is a rare earth element with a nonvanishing electronic angular momentum in the electronic ground state ( $L=5$ ) and a large magnetic moment ( $\mu=7\mu_B$ ). There are few experiments worldwide that investigate quantum gases of rare earth elements.

## **Erbium Bose-Einstein-Condensate — IAP**

He Bose-Einstein condensate it is a state of matter that occurs in certain particles at temperatures close to absolute zero. For a long time it was thought that the three possible states of aggregation of matter were solid, liquid and gas. Then the fourth state was discovered: plasma; and the Bose-Einstein condensate is considered the fifth state.

## **Bose-Einstein Condensate: Properties, Applications | Life ...**

From left to right: Immanuel Bloch, Sandro Stringari, Francesca Ferlaino, Lev Pitaevskii, Thierry Giamarchi, Jürgen Stuhler. Last week Francesca Ferlaino has received the Junior BEC Award 2019 for her “pioneering work on Bose-Einstein condensation of dipolar Erbium atoms and more generally degenerate quantum gases with long-range interactions and for realizing novel quantum phases of matter ...

## **Congratulations to Francesca for the Junior ... - erbium.at**

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Bose-Einstein condensate (BEC), a state of matter in which separate atoms or subatomic particles, cooled to near absolute zero (0 K,  $-273.15\text{ }^{\circ}\text{C}$ , or  $-459.67\text{ }^{\circ}\text{F}$ ; K = kelvin), coalesce into a single quantum mechanical entity—that is, one that can be described by a wave function—on a near-macroscopic scale.

### **Bose-Einstein condensate | state of matter | Britannica**

The crossover from the superconductivity of the Bardeen-Cooper-Schrieffer (BCS) regime to the Bose-Einstein condensation (BEC) regime holds a key to understanding the nature of pairing and condensation of fermions. It has been mainly studied in ultracold atoms, but in solid systems, fundamentally previously unknown insights may be obtained because multiple energy bands and coexisting ...

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