

# The concept of superconducting container

What are superconductors & superconductivity?

Superconductors and superconductivity are a fascinating field in modern physics and materials science, with applications ranging from magnetic resonance imaging (MRI) to quantum computing. Here is a look at the concept of superconductors, how they are classified, their properties, how they work, and their applications.

What is superconducting condensate?

**Superconducting Condensate:** The basic idea is to treat superconductors as quantum systems in which all electrons in the sample can be described by the same wave function, which is analogous to the wave function of just one electron. Such behavior is called coherent behavior.

Can superconducting materials carry electricity without resistance?

The ability of superconducting materials to carry electricity without resistance makes them ideal for the delicate quantum circuits required in these next-generation computing devices. These devices have revolutionized fields like cryptography, materials science, and drug discovery.

How does a superconductor function?

A superconductor functions by carrying high currents in the presence of high magnetic fields with zero resistance to the steady flow of electrical current. This property points towards applications involving energy and power.

How is a superconducting material characterized?

As we have seen previously, a superconducting material is characterized by an order parameter  $\langle \Psi(\mathbf{r}) \rangle$  having a constant phase  $\langle \varphi \rangle$ . A phase variation causes the current to flow.

What are superconductor materials?

**Policies and ethics** Since their discovery, superconductor materials have been the subject of extensive studies thanks to their original properties. Such materials are endowed by zero resistance at a low temperature making it possible to conduct the electric current without loss of...

We propose a generalization of the concept of superconducting fitness, which allows us to make statements analogous to Anderson's theorems concerning the stability of ...

informative conclusions on the properties of the superconducting state. Here we try to describe the basic picture of superconductivity using minimum amount of input information. We ...

The on-board refrigerator Cryogenics 1997 Volume 37, Number 7 363 Heating in superconducting magnet of a maglev system: E. Suzuki Radiation shield plate Outer vessel ...

Concepts of maglev and superconducting magnet Figure 1 shows the concept of maglev. The propulsion (and guidance) coils and levitation coils are arranged on the guideway and the container, ...

In *Principles of Superconducting Quantum Computers*, a pair of distinguished researchers delivers a comprehensive and insightful discussion of the building of quantum computing ...

**Superconducting Magnetic Energy Storage (SMES)** In an SMES system, electric power is stored in the magnetic field of a large superconducting magnet, and can be retrieved efficiently at ...

duced to zero. Suppose a folded superconducting container is cooled in a magnetic field; it will exclude some flux and it will trap the remainder. If the container is now unfolded, the flux ...

A container-less melting experiment was carried out using a newly developed 20 T cryogen-free hybrid magnet. A great interest is focused on Marangoni convection in ...

When superconducting materials work in the superconducting state, characterised by no resistance and large current-carrying capacity, which is an ideal conductor ...

The present concept of superconducting generators is to use high-temperature superconducting (HTS) wire in the rotor field windings of a synchronous generator. ... The superconducting coil ...

High- $T_c$  superconducting (HTS) ... To tackle this issue, we present the concept of using a series array of  $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$  ... The hot blackbody was implemented by ...

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