

Ball lightning energy storage



Overview

What is the energy source of ball lightning?

The energy and its source of ball lightning (BL) have long been a mystery. At present, there is no consensus on the energy source of BL. The radiation power density and its evolution of a BL are investigated based on its spectra for the first time.

What is the electron-ion model of ball lightning?

The electron-ion model describes not only ball lightning, but also bead lightning, which usually occurs when linear lightning disintegrates. Based on the known dimensions of the beads of bead lightning, it is possible to calculate the electric charge of a single bead and its magnetic field.

What are the properties of ball lightning?

The theory successfully explains many properties of ball lightning. For the first time, we reveal that ball lightning is an alarm signal of the existence of ultrastrong microwaves and abundantly hazardous electrons near the ground or aircraft. This result is of great significance for lightning protection and aviation safety.

What is the long-term stability of ball lightning?

The long-term stability of ball lightning is ensured by the balance of electric and magnetic forces. The electric force acting on the electrons from the positive volume charge of the ions is the centripetal force that holds the electrons in place as they rotate.

What is ball lightning made of?

Oleg Meshcheryakov suggests that ball lightning is made of composite nano or submicrometer particles—each particle constituting a battery. A surface discharge shorts these batteries, causing a current that forms the ball. His model is described as an aerosol model that explains all the observable

properties and processes of ball lightning.

What is ball lightning?

Ball lightning has been described as transparent, translucent, multicolored, evenly lit, radiating flames, filaments or sparks, with shapes that vary between spheres, ovals, tear-drops, rods, or disks. Although they are separate and distinct phenomena, ball lightning is often erroneously identified as St. Elmo's fire.

Ball lightning energy storage



Ball Lightning as Source of High-Energy Particles When It

...

The ball lightning there is a source of high density energy. Earlier observers found an abnormally high thermal yield when the ball lightning enters into the water tank under natural conditions. In ...

The Principles of Developing the Ball Lightning Theory

The second model proposed by Vladimir Bychkov assumed that the energy reservoir of ball lightning is polymer threads carrying a big electric charge. Our model assumes that the energy ...



What Nature Is Trying to Tell the Fusion Community

ABSTRACT Ball lightning has been extensively reported, usually in association with thunder storms, by chance observers who constitute perhaps five percent of the adult u.s. population. ...

Ball lightning energy storage

Ball lightning is often reported as a ring current, in toroid shape, and since a spinning ring

appears as a sphere or ball, the spinning plasma toroid provides an explanation for ball lightning. The ...



High-Energy Atmospheric Physics: Ball Lightning

Ball lightning is an unexplained atmospheric phenomenon that is usually associated with thunderstorms and lasts considerably longer than the split-second flash of a lightning bolt. Ball ...



The Radiation Power Density of a Natural Ball Lightning ...

Abstract The energy and its source of ball lightning (BL) have long been a mystery. At present, there is no consensus on the energy source of BL. The radiation power ...



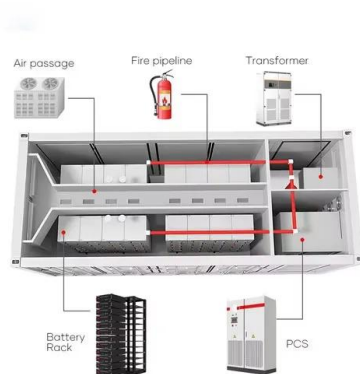
Ball Lightning: What Nature is Trying to Tell the Plasma Research

The energy density of a few lightning balls has been observed to be as high as $20\,000\text{ J/cm}^3$, well above the limit of chemical energy storage of, for example, TNT at 2000 J/cm^3 ...



Lightning for Energy and Material Uses: A Structured Review

Thunderstorm charge-separation processes suggest a new class of electricity generators based on kinetic energy and material collision. Ball lightning suggests additional ...



(PDF) Sources and components of ball lightning theory

The article describes the cases when ball lightning (BL) exhibited an extremely high specific energy store (up to 10^{17} J/m³), a presence of ...

Toward a theory of ball lightning occurring in houses and aircraft

Highlights o Calculations indicate that the formation, energy source and lifetime of Ball Lightning can be explained by the production of singlet delta metastable states of oxygen. ...



Explosions of Ball Lightning inside Enclosed Spaces

According to observations, the energy density contained inside ball lightning can reach 10^{10} J/m³, and its charge can range from 10^{-3} to 10^{-1} C. Witnesses often report ...



Energy Balls Electricity

Katzco 7 Inch Plasma Ball Lamp - Touch and Sensitive Electric Globe with Lightning Effects - Plug-in Energy Ball for Parties, Room Decor, and STEM Learning - Static Electricity Sphere for ...



Microsoft Word

The analysis of modern models of ball lightning displays, that they are unsatisfactory on a series of tests. The model of ball lightning is offered, which exterior electronic envelope is retained by ...

Ball lightning

The observational characteristics of ball lightning, as derived from eye-witness testimony and a small amount of objective evidence, are outlined. Limitations in the quality of ...





PP-46-17.dvi

These contours are hard packed in a small volume of ball lightning, forming a multilayer capacitor containing a substantial charge and elec-trostatic energy. This paper provides calculations of ...

Proton-electron model of ball lightning structure

The installation for obtaining ball lightnings consists of capacitive energy storage, diagnostic devices, a high-voltage charger, a commutation unit and a device for creation of the ...



Kiril Chukanov: Ball Lightning

Dr. Chukanov states: "This prototype features a wide range of instrumental measurements and complex automation. The core of the generator contains the ball lightning, while circuitry and ...

Advances in ball lightning research

Ball lightning is a rarely observed phenomenon whose existence is attested to by thousands of eyewitness reports, but which has so far evaded a widely accepted scientific explanation. This ...



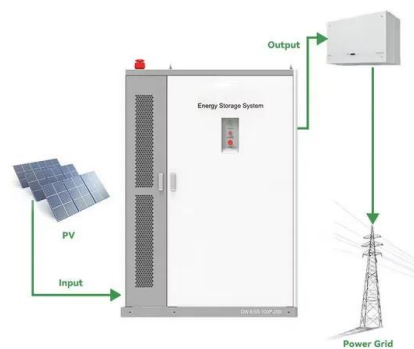
Ball Lightning as a Radiation Bubble

8. Energy of the ball is one of the less well defined characteristics. However, there are numerous instances where a lightning ball came very close to people without causing injury. 9. Damage is ...



Structure of laboratory ball lightning

The buoyant behavior of ball lightning seen in our experiments is believed to arise as a result of the formation of a nanoparticle oxide network growing from a molten silicon core.



What Is Ball Lightning: All-In-One Guide To This ...

Research has considered energy storage due to the high energy density that lightning appears to exhibit. If the mechanisms of ball ...

Ball Lightning , Phys. Rev.

A plasmoid model for ball lightning is examined. The usual virial theorem shows that confinement by self-field alone is inconsistent with conservation laws for energy and momentum; a ...



The properties and the nature of ball lightning

Among these are the ways of energy storage in ball lightning, the mechanisms of thermal processes, the form and structure of ball lightning, and the electrical phenomena and ...

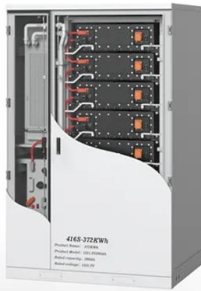
Ball lightning explained as a stable plasma toroid

Summary form only given, as follows. Describes spinning plasma toroids that are created using high power electric arcs similar to lightning bolts. The spinning toroids are ...



BALL LIGHTNING EXPLAINED AS A STABLE PLASMA ...

can be stable in atmosphere with no external magnetic fields, and how it can contain many electrons with high energy. Ball lightning is often reported as a ring current, in toroid shape, ...



Possible process of ball lightning training in nature

Highlights o Ball lightning is considered as a system of the positively charged core and dielectric shell. o The core is formed from electrons and protons, moving in closed orbits. o

...



Features of the mechanism of ball lightning electromagnetic

...

If, indeed, a mode of existence of ball lightning with a minimum rate of energy loss is possible, then this significantly increases interest to it as a promising energy storage ...



Ball Lightning-Aerosol Electrochemical Power Source or A Cloud ...

Abstract Despite numerous attempts, an adequate theoretical and experimental simulation of ball lightning still remains incomplete. According to the model proposed here, the processes of ...





Ball lightning: new physics, new energy source, or just ...

Summary form only given. Ball lightning is a natural phenomenon characterized by a glowing ball of light that forms outside in the open air and inside closed rooms, aircraft, ...

Ball lightning as a route to fusion energy

Ball lightning can have a diameter up to several meters, a lifetime of over 100 s, an energy content in excess of 10 MJ, and an energy density and a kinetic pressure greater than that of a reacting ...



Lightning for Energy and Material Uses: A Structured ...

Thunderstorm charge-separation processes suggest a new class of electricity generators based on kinetic energy and material collision. Ball ...

Properties of Ball Lightning as a Basis for Creating Its Theory

Ball lightning is a material body consisting of a shell and a multi-element core. Cases of water heating made it possible to determine energy density of ball lightning, which turned out to be ...



Ball-Lightning-like Terahertz Solitons

Although the study of stationary relativistic electromagnetic solitons holds significant potential for advancing high-energy photon storage and radiation mechanisms - as exemplified by natural ...

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