



THE DISCOVERY OF SUPERCONDUCTIVITY

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One hundred years ago, on April 8, 1911, Heike Kamerlingh Onnes and his staff at the Leiden cryogenic laboratory were the first to observe superconductivity [1]. In a frozen mercury wire, contained in seven U-shaped capillaries in series (see Fig. 1), electrical resistance suddenly seemed to vanish at 4.16 kelvin [2]. Short-circuit – an apparently obvious explanation – was excluded, but the question exactly what was going on would only receive a satisfactory answer at the fundamental level with the publication of the BCS theory in 1957 [3].

The discovery of superconductivity may have been accidental, but nonetheless the experiment was part of a carefully-considered research programme in Leiden. Studying the behaviour of the electrical resistance of metals (such as gold and platinum) at very low temperatures was interesting from both a practical and a theoretical point of view. Practical, because the fact that metal resistors were dependent on temperature made it possible to use them as (secondary) thermometers – thereby raising the possibility of a welcome addition to

the (primary) gas thermometer which, although accurate, was cumbersome to use and slow in response. Theoretical, because Paul Drude had already applied the kinetic theory of gases to an electron gas in a metal in 1900, and on that basis had deduced the linear decrease in resistance with absolute temperature, while William Thomson (Lord Kelvin) had predicted one year later that at extremely low temperatures, the conducting electron would in fact become ‘frozen solid’ to the atoms, such that at absolute zero, resistance would become infinite [4].

▲ The Atlas detector of the Large Hadron Collider at CERN, Geneva

Superconductivity From Discovery To Breakthrough

Camilla Rothe



Superconductivity From Discovery To Breakthrough:

Superconductivity From Discovery To Breakthrough: Bestsellers in 2023 The year 2023 has witnessed a remarkable surge in literary brilliance, with numerous compelling novels captivating the hearts of readers worldwide. Lets delve into the realm of popular books, exploring the fascinating narratives that have captivated audiences this year. Superconductivity From Discovery To Breakthrough : Colleen Hoover's "It Ends with Us" This poignant tale of love, loss, and resilience has captivated readers with its raw and emotional exploration of domestic abuse. Hoover masterfully weaves a story of hope and healing, reminding us that even in the darkest of times, the human spirit can triumph. Uncover the Best : Taylor Jenkins Reids "The Seven Husbands of Evelyn Hugo" This captivating historical fiction novel unravels the life of Evelyn Hugo, a Hollywood icon who defies expectations and societal norms to pursue her dreams. Reids absorbing storytelling and compelling characters transport readers to a bygone era, immersing them in a world of glamour, ambition, and self-discovery. Superconductivity From Discovery To Breakthrough : Delia Owens "Where the Crawdads Sing" This captivating coming-of-age story follows Kya Clark, a young woman who grows up alone in the marshes of North Carolina. Owens weaves a tale of resilience, survival, and the transformative power of nature, captivating readers with its evocative prose and mesmerizing setting. These top-selling novels represent just a fraction of the literary treasures that have emerged in 2023. Whether you seek tales of romance, adventure, or personal growth, the world of literature offers an abundance of compelling stories waiting to be discovered. The novel begins with Richard Papen, a bright but troubled young man, arriving at Hampden College. Richard is immediately drawn to the group of students who call themselves the Classics Club. The club is led by Henry Winter, a brilliant and charismatic young man. Henry is obsessed with Greek mythology and philosophy, and he quickly draws Richard into his world. The other members of the Classics Club are equally as fascinating. Bunny Corcoran is a wealthy and spoiled young man who is always looking for a good time. Charles Tavis is a quiet and reserved young man who is deeply in love with Henry. Camilla Macaulay is a beautiful and intelligent young woman who is drawn to the power and danger of the Classics Club. The students are all deeply in love with Morrow, and they are willing to do anything to please him. Morrow is a complex and mysterious figure, and he seems to be manipulating the students for his own purposes. As the students become more involved with Morrow, they begin to commit increasingly dangerous acts. The Secret History is a brilliant and thrilling novel that will keep you wondering until the very end. The novel is a warning tale about the dangers of obsession and the power of evil.

https://archive.kdd.org/results/browse/fetch.php/Teacher_Jokes.pdf

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