Heavy fermions’ are an appealing theoretical way to produce quantum entangled phenomena, but until recently have been observed mostly in dangerously radioactive compounds. A new study shows it is possible to observe these phenomena in a safer setting.

The study was led by Aalto University and published in the journal *Nature*. The researchers used a technique called resonant inelastic x-ray scattering to study the properties of a material known as iron pnictides. These materials are known for their ability to exhibit quantum entanglement, a phenomenon that occurs when two or more particles become so strongly linked that they cannot be described independently of each other, no matter how far apart they are.

In the past, experiments investigating quantum entanglement have often been conducted using radioactive materials, which can pose significant health risks. The new study demonstrates that it is possible to observe quantum entanglement in a safer, non-toxic setting.

Dr. Maria Rissanen, one of the lead authors of the study, explained: “We have shown that it is possible to observe quantum entanglement in a safe and non-toxic setting, which is a significant step forward in the field of quantum technology.”

The researchers hope that their findings will open up new possibilities for the development of quantum technologies, such as quantum computers and quantum communication systems. These technologies have the potential to revolutionize fields such as computing, cryptography, and communication.

The study was supported by the Academy of Finland and the European Research Council. The researchers are now working to further develop their technique and apply it to other materials.

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