Полезная лексика по теме

«Видеоразбор: учим английский и телепортируемся на море»

Is teleportation possible? Could a baseball **transform** into something like a **radio wave**, travel through buildings, **bounce around corners**, and change back into a baseball? **Oddly enough**, thanks to **quantum mechanics**, the answer might actually be yes. **Sort of**. Here's the trick.	to transform — преобразовать, изменить a radio wave — радиоволна to bounce around corners — отскакивать от углов oddly enough — как ни странно; любопытно quantum mechanics — квантовая механика sort of — типа того
The baseball itself couldn't be sent **by radio**, but all the information about it could. In **quantum physics**, **atoms** and **electrons** are **interpreted** as a collection of **distinct properties**, for example, **position**, **momentum**, and **intrinsic spin**.	by radio — посредством радиоволн quantum physics — квантовая физика an atom — атом an electron — электрон to interpret — интерпретировать, трактовать distinct properties — определенные свойства a position — координаты, местоположение, расположение momentum — импульс intrinsic spin — внутреннее вращение
The **values** of these properties **configure** the **particle**, giving it a **quantum state identity**. If two electrons have the same quantum state, they're identical.	a value — величина, показатель to configure — формировать, задавать структуру a particle — частица a quantum state — квантовое состояние an identity — идентичность, тождество

In a literal sense, our baseball is defined by a **collective quantum state** resulting from its many atoms. If this quantum state information could be read in Boston and sent around the world, atoms for the same **chemical elements** could have this information **imprinted on** them in Bangalore and be carefully directed to **assemble**, becoming the exact same baseball. There's a **wrinkle** though.	a collective quantum state — множество, совокупность квантовых состояний a chemical element — химический элемент to imprint something on something — запечатлеть, воссоздать что-то где-то to assemble — собираться, объединяться a wrinkle — загвоздка, недостаток
Quantum states aren't so easy to **measure**. **The uncertainty principle** in quantum physics **implies** the position and momentum of a particle can't be measured at the same time. The simplest way to measure the exact position of an electron requires **scattering** a particle of light, a **photon**, from it, and **collecting the light in a microscope**.	to measure — измерять the uncertainty principle — принцип неопределенности to imply — свидетельствовать, подразумевать scattering — распространение, распределение a photon — частица света, фотон to collect the light in a microscope — собирать свет в микроскоп
But that scattering changes the momentum of the electron in an **unpredictable** way. We lose all previous information about momentum. **In a sense**, **quantum information** is **fragile**. Measuring the information changes it. So how can we **transmit** something we're not **permitted** to fully read without **destroying** it? The answer can be found in the strange **phenomena** of **quantum entanglement**.	unpredictable — непредсказуемый in a sense — отчасти, в некотором роде quantum information — квантовая информация fragile /ˈfrædʒ.aɪl/ — хрупкий, нестабильный, легко разрушающийся to transmit — передавать, транслировать to permit — разрешать to destroy — разрушать a phenomenon (plural — phenomena) — феномен, явление quantum entanglement — квантовая запутанность

Entanglement is an old **mystery** from the early days of quantum physics and it's still not entirely understood. **Entangling** the spin of two electrons results in an influence that **transcends distance**. Measuring the spin of the first electron **determines** what spin will measure for the second, whether the two particles **are** a mile or a **light year apart**. Somehow, information about the first electron's quantum state, called a **qubit of data**, influences its partner without transmission across the **intervening space**.	a mystery — загадка, тайна to entangle — запутывать to transcend distance — преодолевать расстояние to determine — определять a light year — световой год to be apart — быть на расстоянии a qubit of data — кубит данных intervening space — разделительное, промежуточное пространство
Einstein and his colleagues called this strange communication **spooky action at a distance**. While it does seem that entanglement between two particles helps transfer a qubit **instantaneously** across the space between them, there's a **catch**.	spooky — жуткий action at a distance — дальнодействие, воздействие на расстоянии instantaneously /ˌɪn.stənˈteɪ.ni.əs.li/ — мгновенно a catch — уловка, ловушка
This interaction must begin **locally**. The two electrons must be entangled **in close proximity** before one of them is transported to a new **site**. By itself, quantum entanglement isn't teleportation. To complete the teleport, we need a **digital message** to help interpret the qubit **at the receiving end**. Two **bits of data** are created by measuring the first particle. These **digital bits** must be transmitted by a classical channel that**'s limited** by the speed of light, radio, **microwaves**, or perhaps **fiber optics**. When we measure a particle for this digital message, we destroy its quantum information, which means the baseball must **disappear** from Boston for it to teleport to Bangalore. Thanks to the uncertainty principle, teleportation transfers the information about the baseball between the two cities and never **duplicates** it.	locally — локально, в пределах определенного района in close proximity — в непосредственной близости a site — площадка, место a digital message — цифровое сообщение at the receiving end — на принимающей стороне a bit of data — бит данных a digital bit — цифровой бит to be limited — быть ограниченным a microwave — микроволна fiber optics — оптическое волокно to disappear — исчезнуть to duplicate /ˈdʒuː.plɪ.keɪt/ — дублировать, копировать

So **in principle**, we could teleport objects, even people, but **at present**, it seems unlikely we can measure the quantum states of the trillion trillion or more atoms in large objects and then **recreate** them elsewhere. The **complexity** of this task and the energy needed is **astronomical**.	in principle — теоретически, в принципе at present — в настоящее время to recreate — воссоздать complexity — сложность, запутанность astronomical — огромный, космический
For now, we can **reliably** teleport single electrons and atoms, which may lead to **super secured data encryption** for future quantum computers. The **philosophical implications** of quantum teleportation are **subtle**. A teleported object doesn't exactly transport across space like **tangible matter**, nor does it exactly transmit across space, like **intangible information**.	reliably — надежно super secured data encryption /ɪnˈkrip.ʃən/ — надежно защищенное шифрование данных philosophical implications — философские выводы subtle — трудноуловимый tangible matter — осязаемая материя intangible information — неосязаемая информация
It seems to do a little of both. Quantum physics gives us a strange new vision for all the matter in our universe as **collections of fragile information**. And quantum teleportation **reveals** new ways to influence this **fragility**. And remember, **never say never**. In **a little over a century**, **mankind** has **advanced** from an uncertain new understanding of the behavior of electrons **at the atomic scale** to reliably teleporting them across a room. What new **technical mastery** of such phenomena might we have in 1,000, or even 10,000 years? Only time and space will tell.	collections of fragile information — хранилища ускользающей информации to reveal — открывать, показывать fragility — неустойчивость, хрупкость never say never — никогда не говори никогда a little over a century — чуть больше столетия mankind — человечество to advance — продвигаться вперед at the atomic scale — в масштабе атома technical mastery — технические возможности