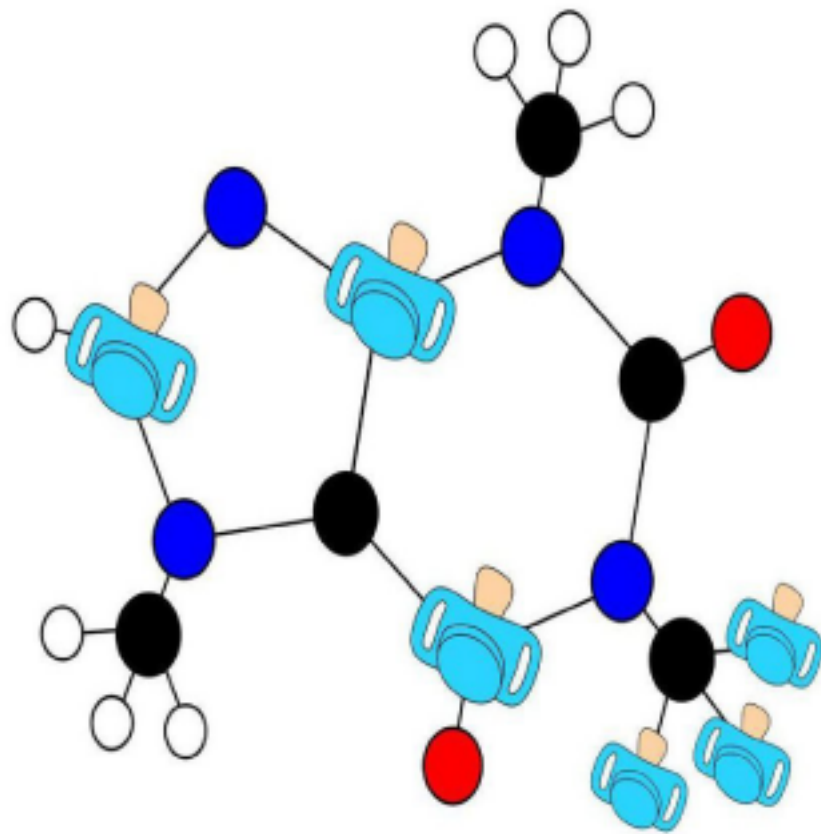


# Quantum Information for Babies



by Chris Ferrie

此点读书制作by：甜蜜酱

**更多免费点读资源，绘本，练习册，语文、英语、数学、自然科学等学习资料**

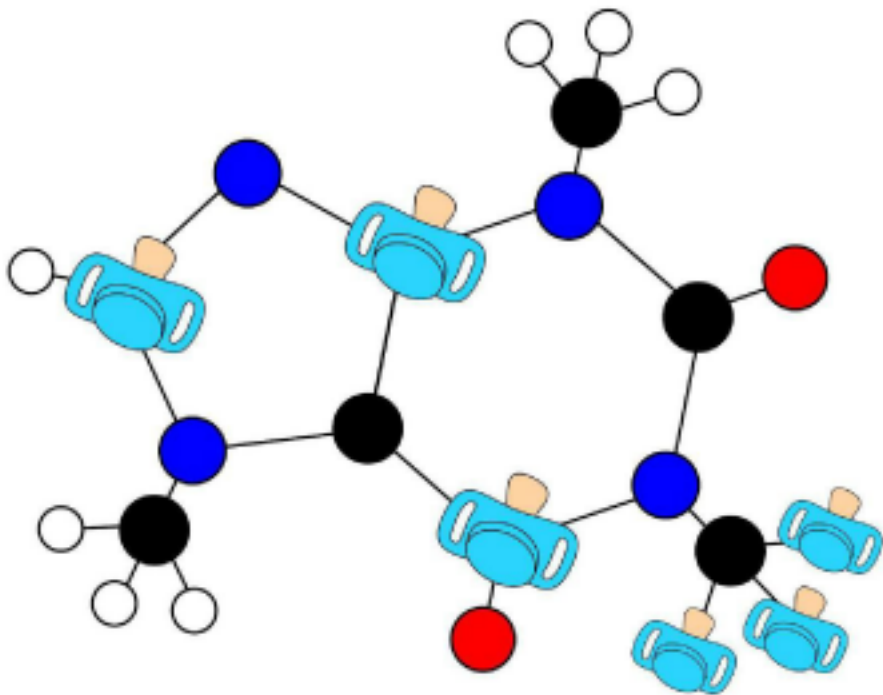
**请关注公众号：宝贝甜蜜酱**



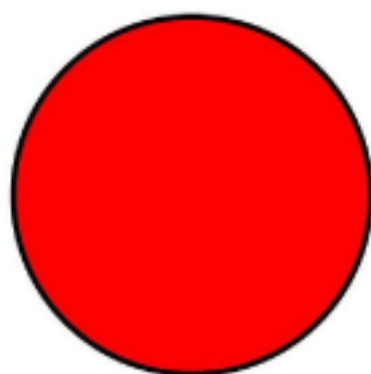
**宝贝甜蜜酱**

微信扫描二维码，关注我的公众号

# Quantum Information for Babies 🎧

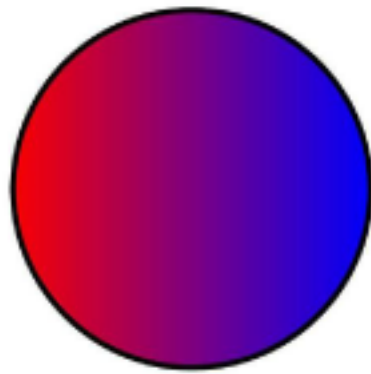


by Chris Ferrie

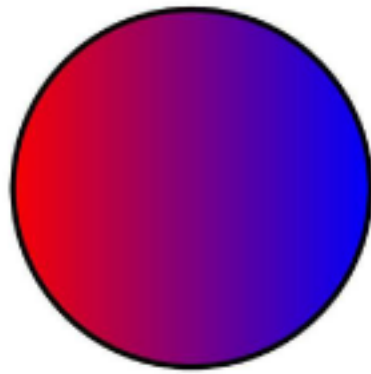


**This is a ball.** 🗣️

**This ball can be**

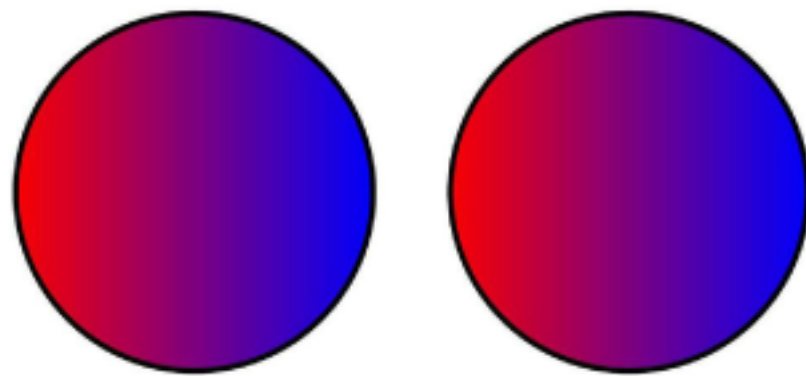


**Red or blue.** 🎧



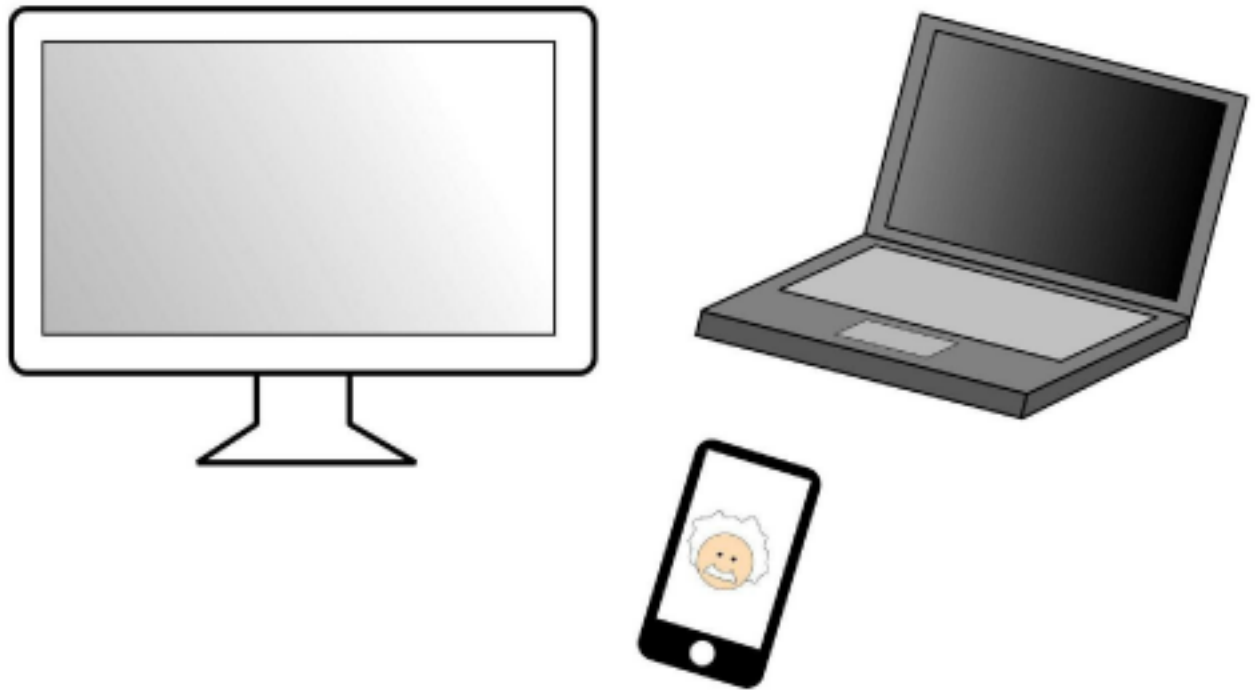
**We need 1 bit of  
information to record  
the color of this ball.**





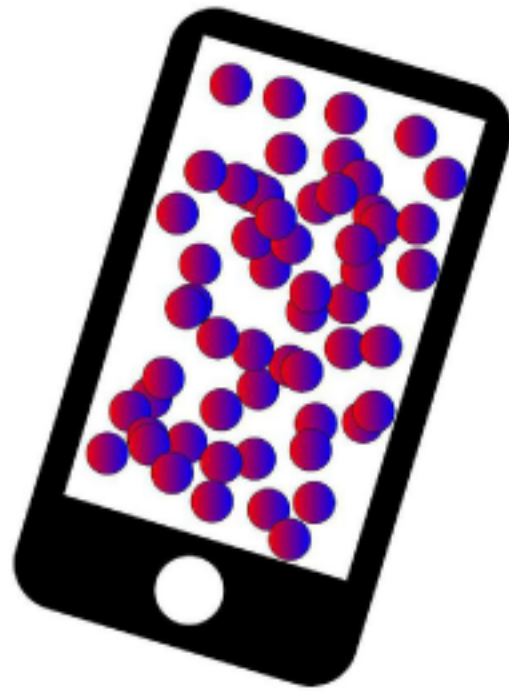
**We need 2 bits of  
information to record  
the color of two balls.**





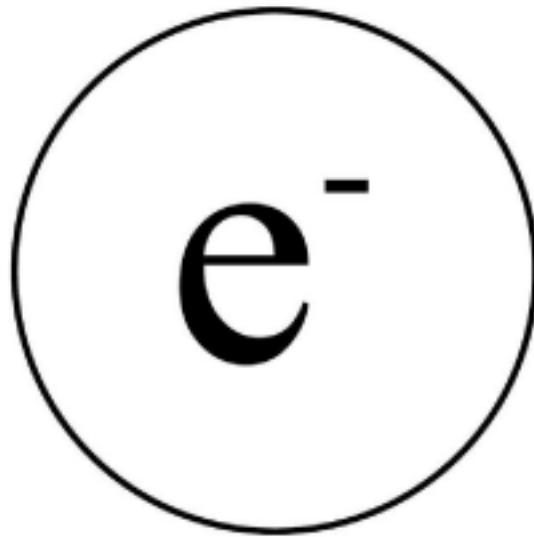
**These are computers  
which can store  
many bits. 🎧**





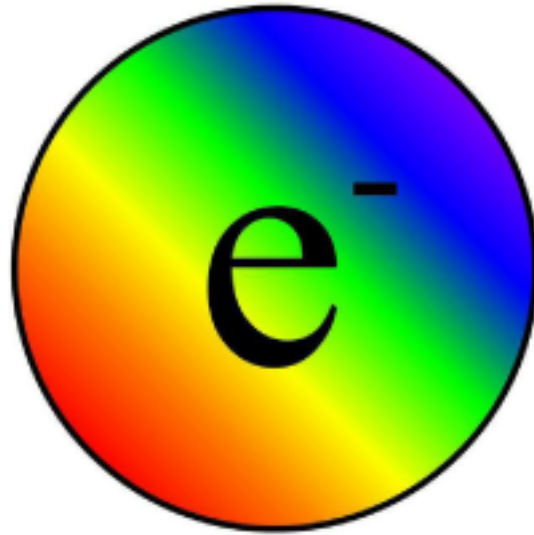
**This phone can store  
1 million bits  
of information.**





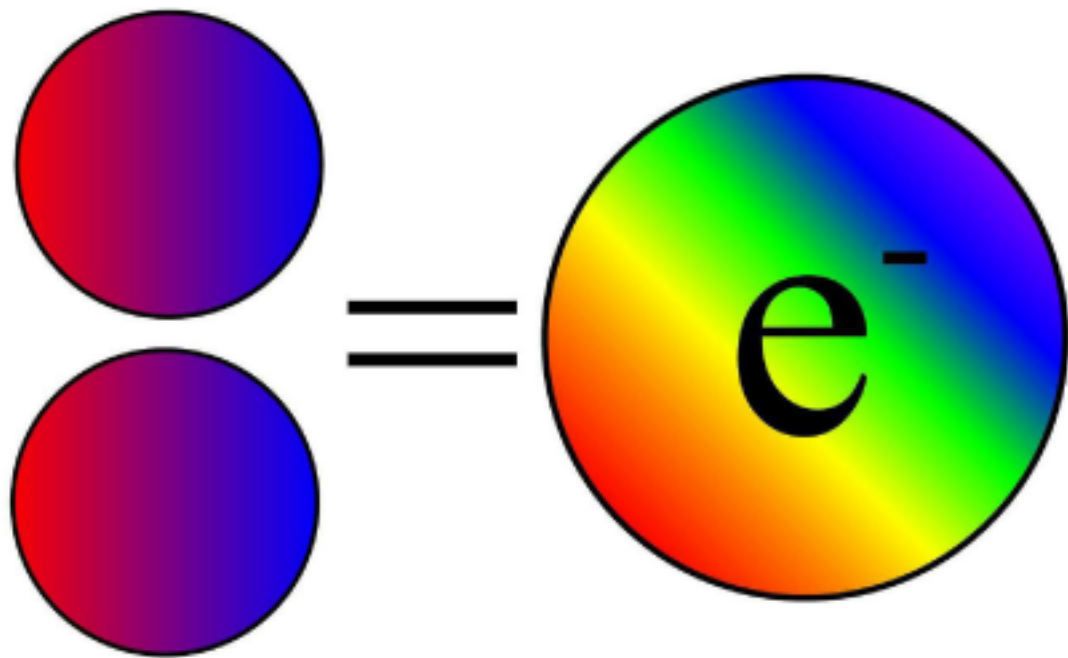
**This is an electron.  
A "quantum" ball.**





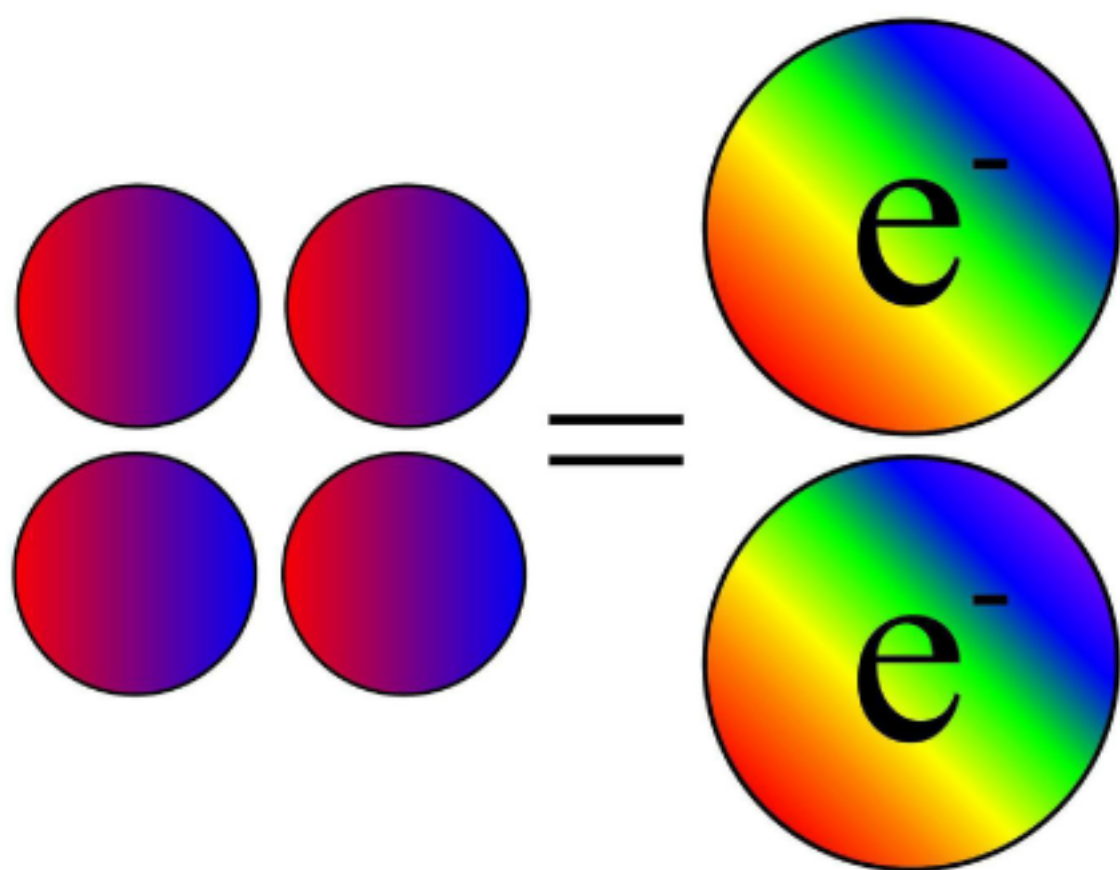
**An electron stores  
a quantum bit or  
qubit of information.**





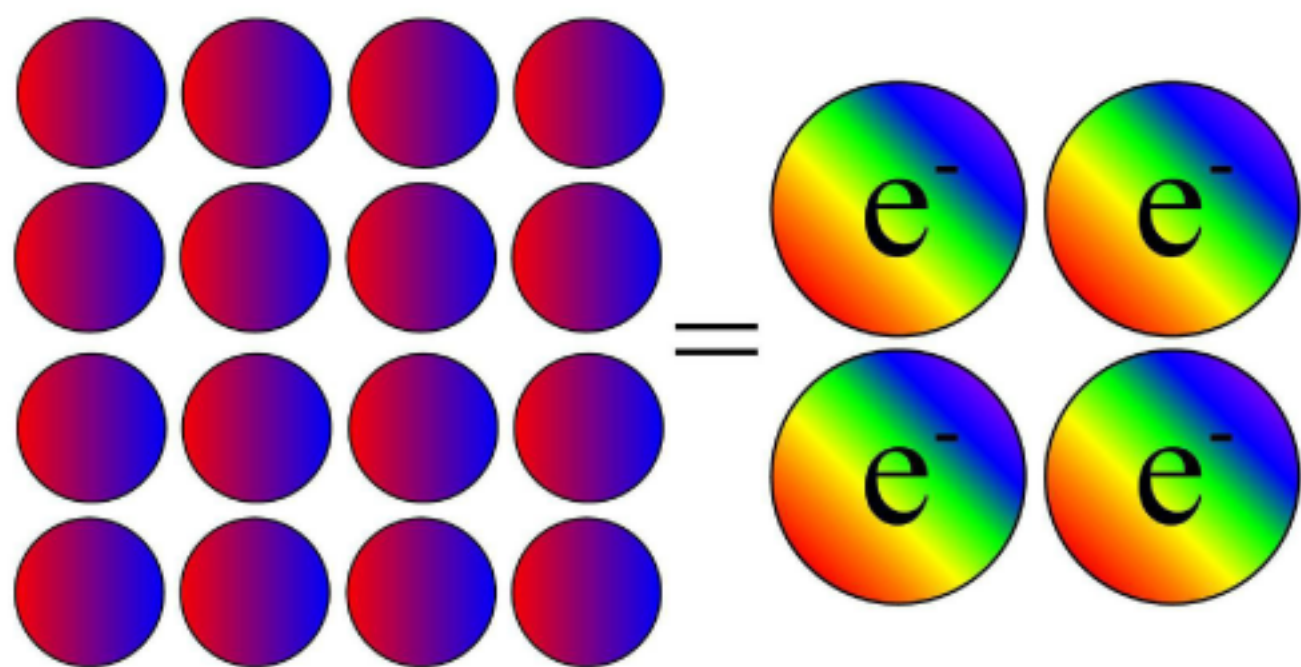
If 2 bits are needed  
to describe 1 qubit,





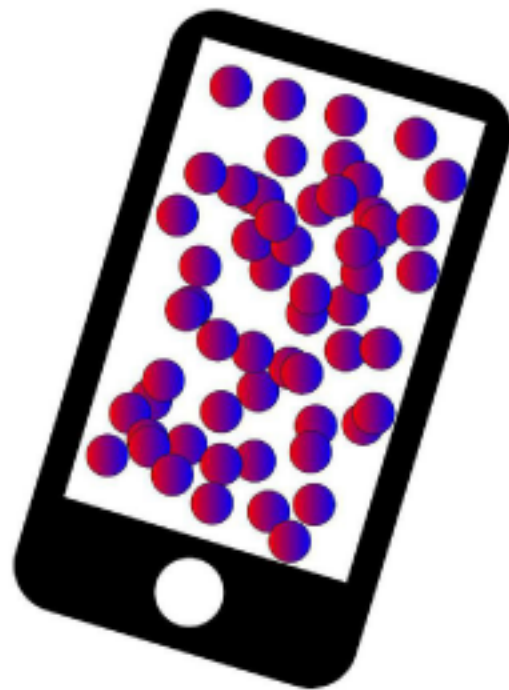
Then 4 bits are needed  
to describe 2 qubits.





**And 16 bits are needed  
to describe 4 qubits.**





**Remember the phone  
that can store  
1 million bits?** 🎧

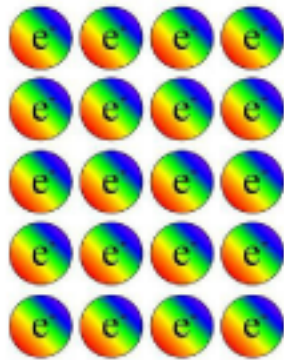


**It can only store  
20 qubits of  
information!**





**20 + 1**

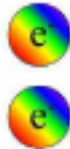
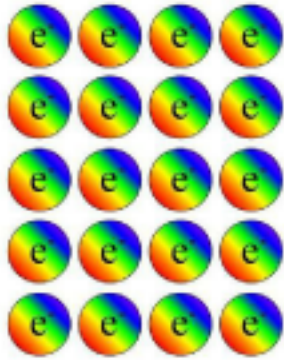


**=**



**21 qubits requiries  
2 phones.** 🎧

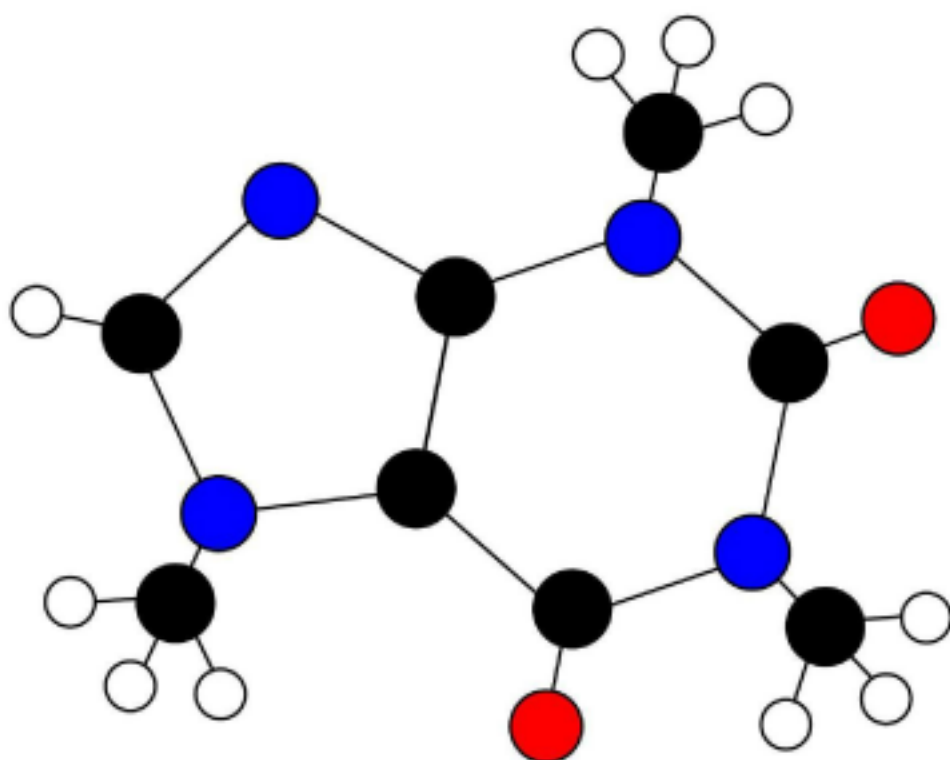
**20 + 2**



**=**



**22 qubits requiries  
4 phones. 🎧**

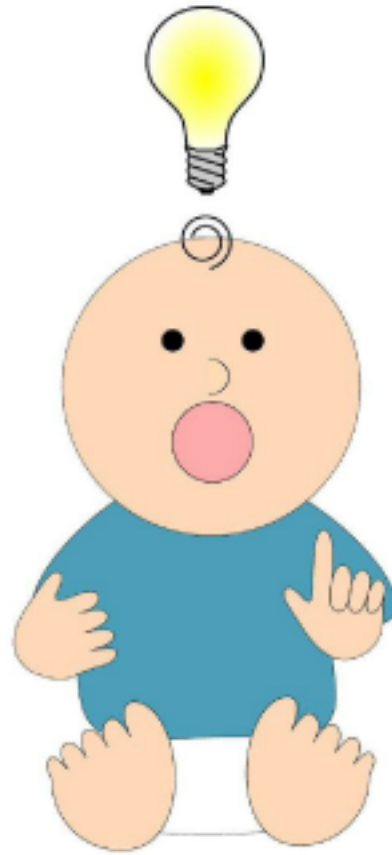


**To store the  
information in my  
favorite molecule**



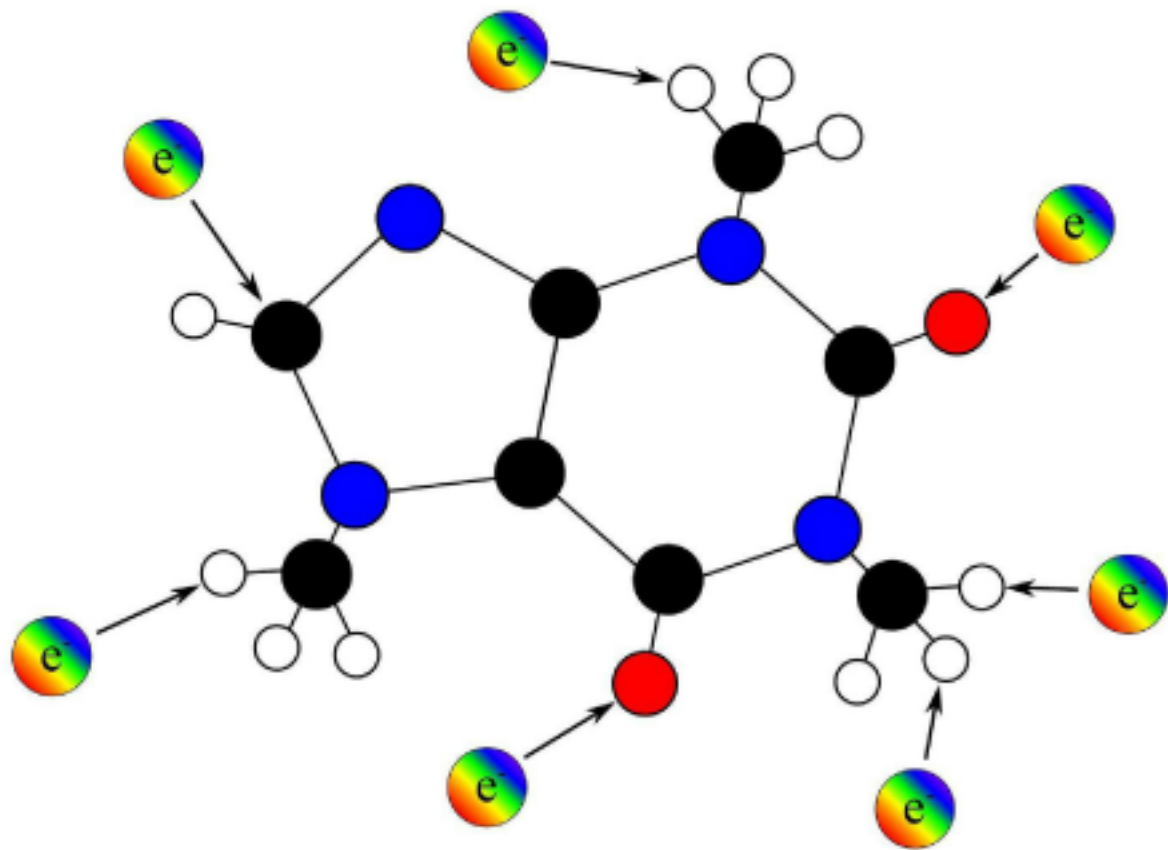


**would require all the  
phones on earth! 🎧**



**What's that baby?**  
**You have an idea?**



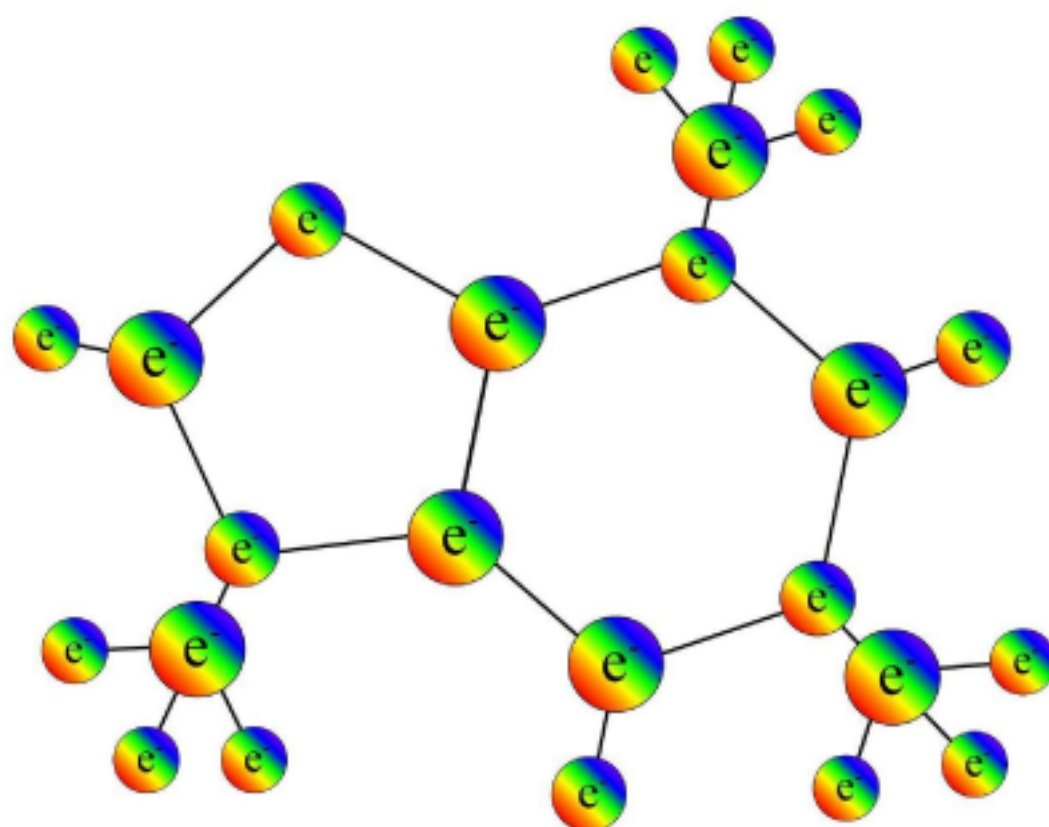


**We can use quantum  
systems to store  
quantum information!**





🔊 **What took all the  
phones in the world...**



**can be done with a  
single molecule! 🎧**



Chris Ferrie is a physicist, mathematician and father of three budding young scientists. He obtained his doctorate in Mathematical Physics from the University of Waterloo in Waterloo, Canada and currently holds a postdoctoral fellowship at the University of New Mexico in Albuquerque, New Mexico.

Chris believes it is never too early to introduce children to the wild and wonderful world of physics!