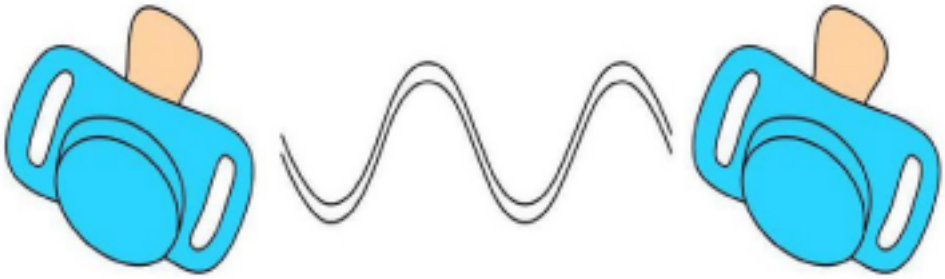
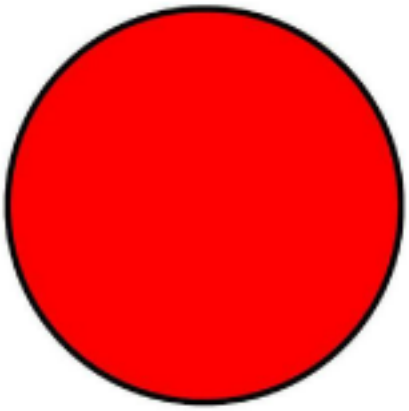
Quantum Entanglement for Babies

宝宝的量子纠缠



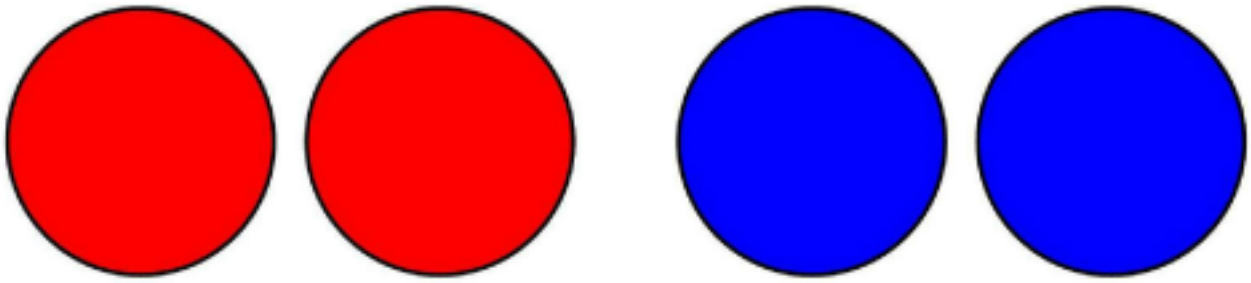
by Chris Ferrie

Edit by AD100



This is a ball.

这是一个球。

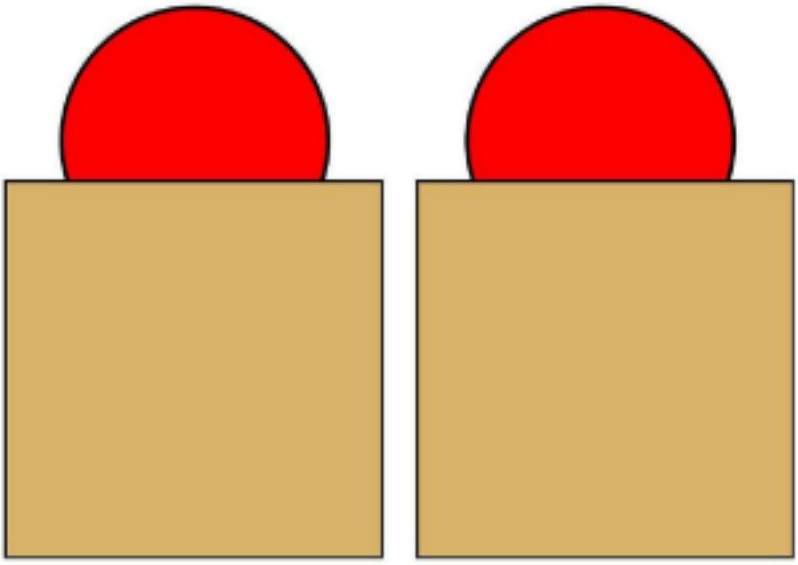


Two red balls.

Two blue balls.

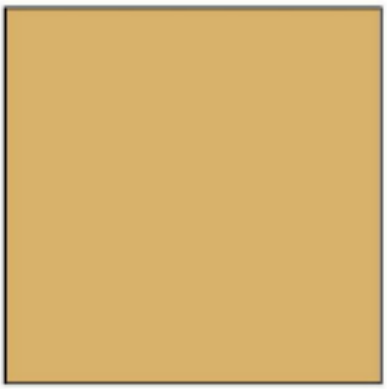
两个红色的球。

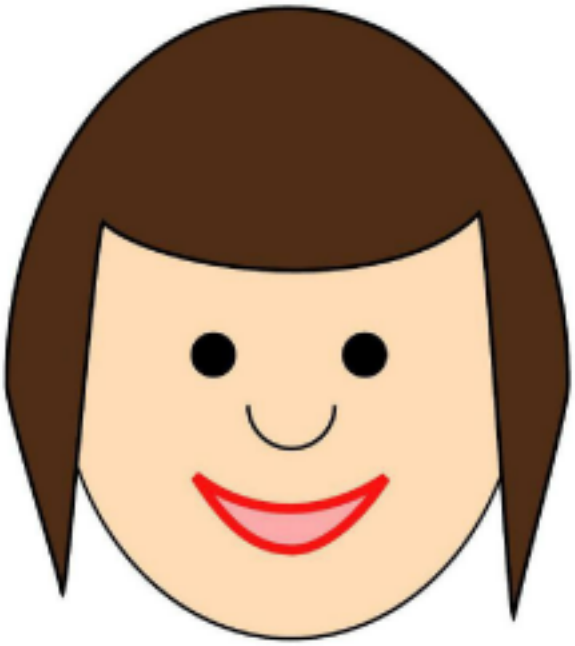
两个蓝色的球。



We pick two balls of the same color and hide them in boxes.

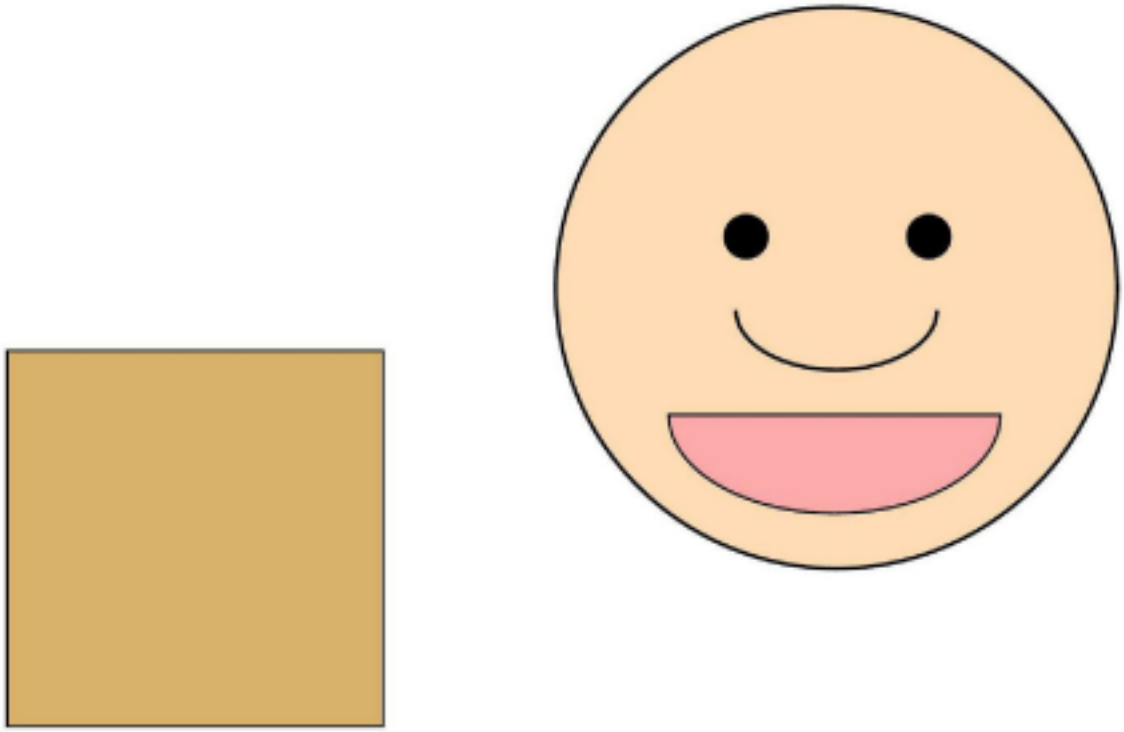
我们拿两个相同颜色的球，把它们藏在箱子里。





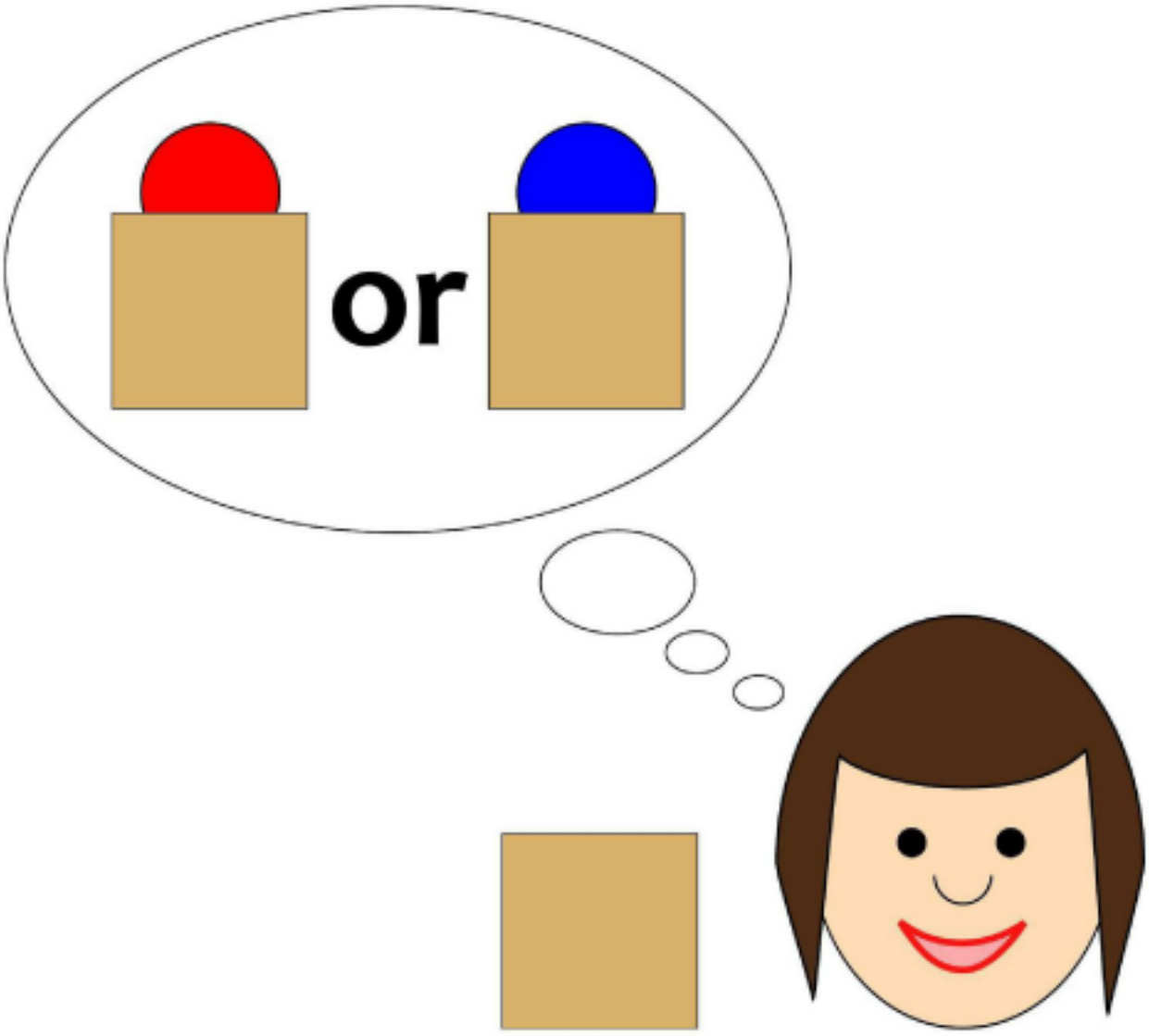
One box for Alice.

一个箱子给艾丽丝。



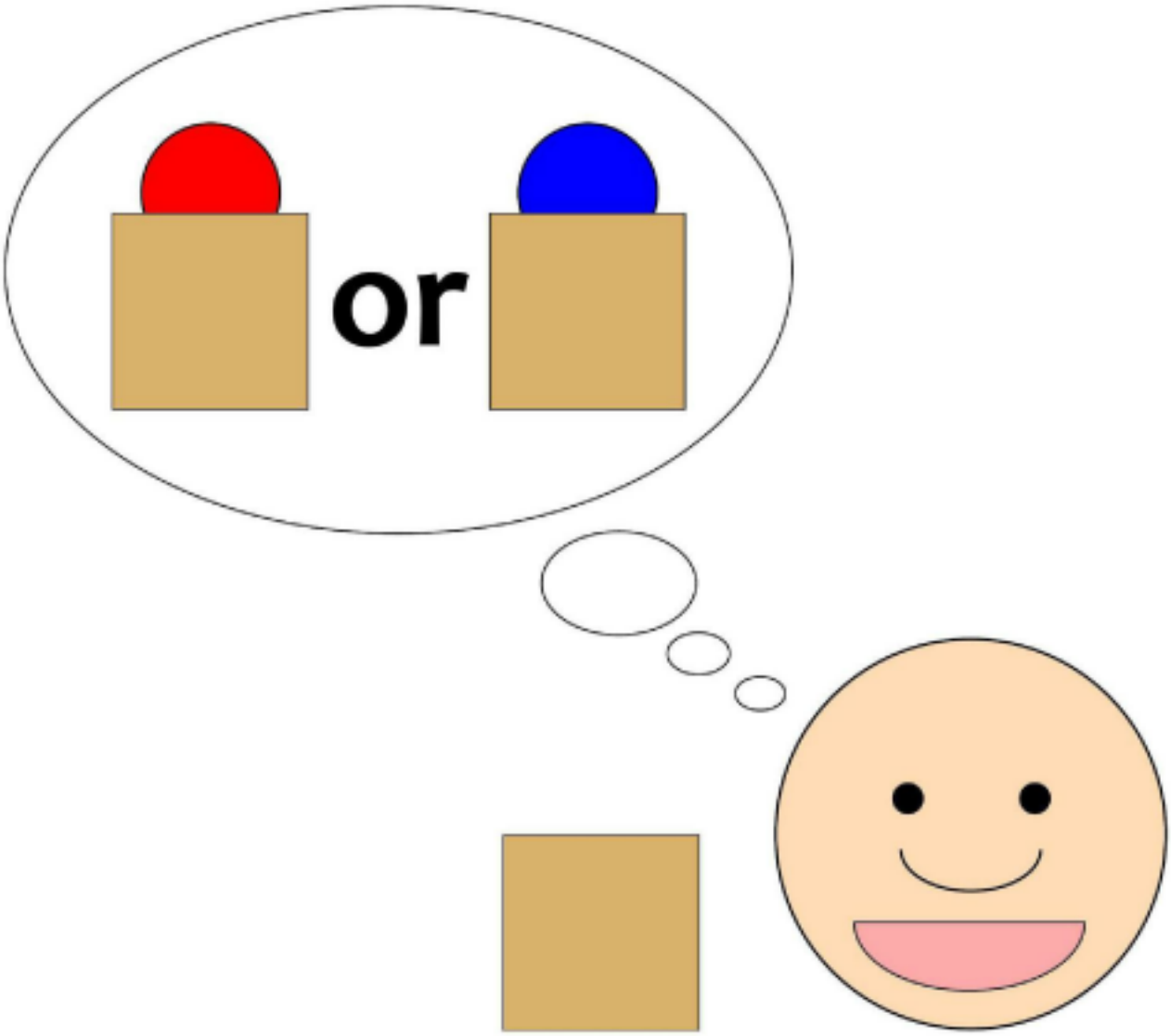
One box for Bob.

一个箱子给鲍勃。



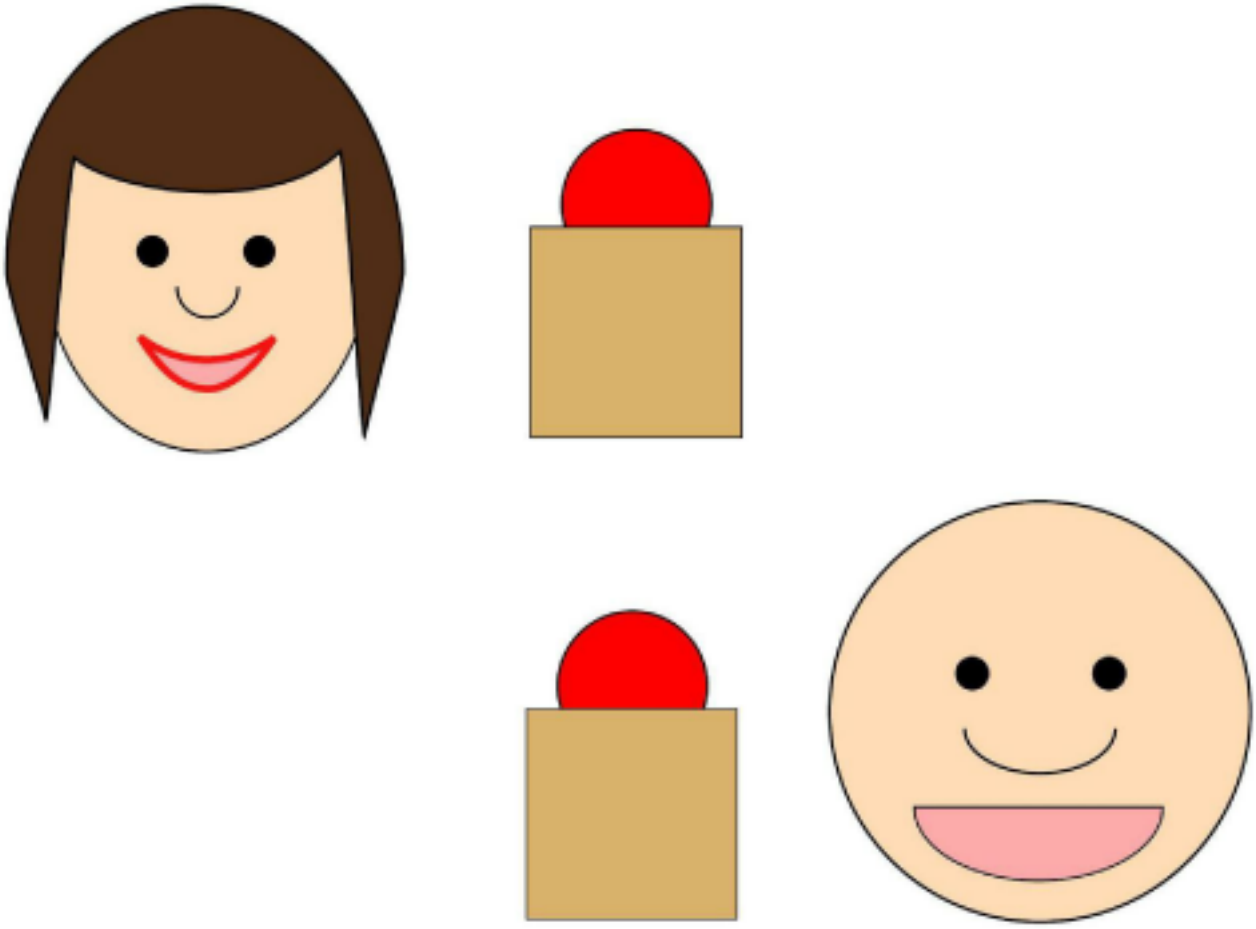
Alice does not know what is in her box.

艾丽丝不知道她的箱子里是什么。



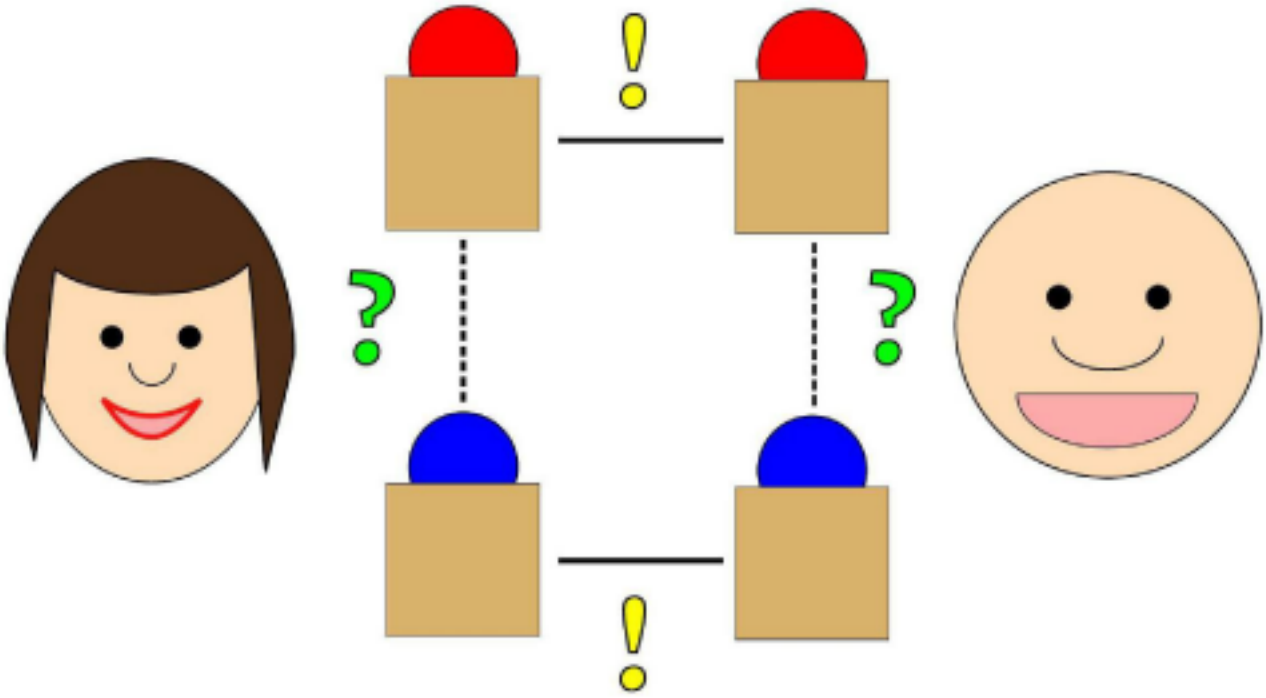
Bob does not know what is in his box.

鲍勃不知道他的箱子里是什么。



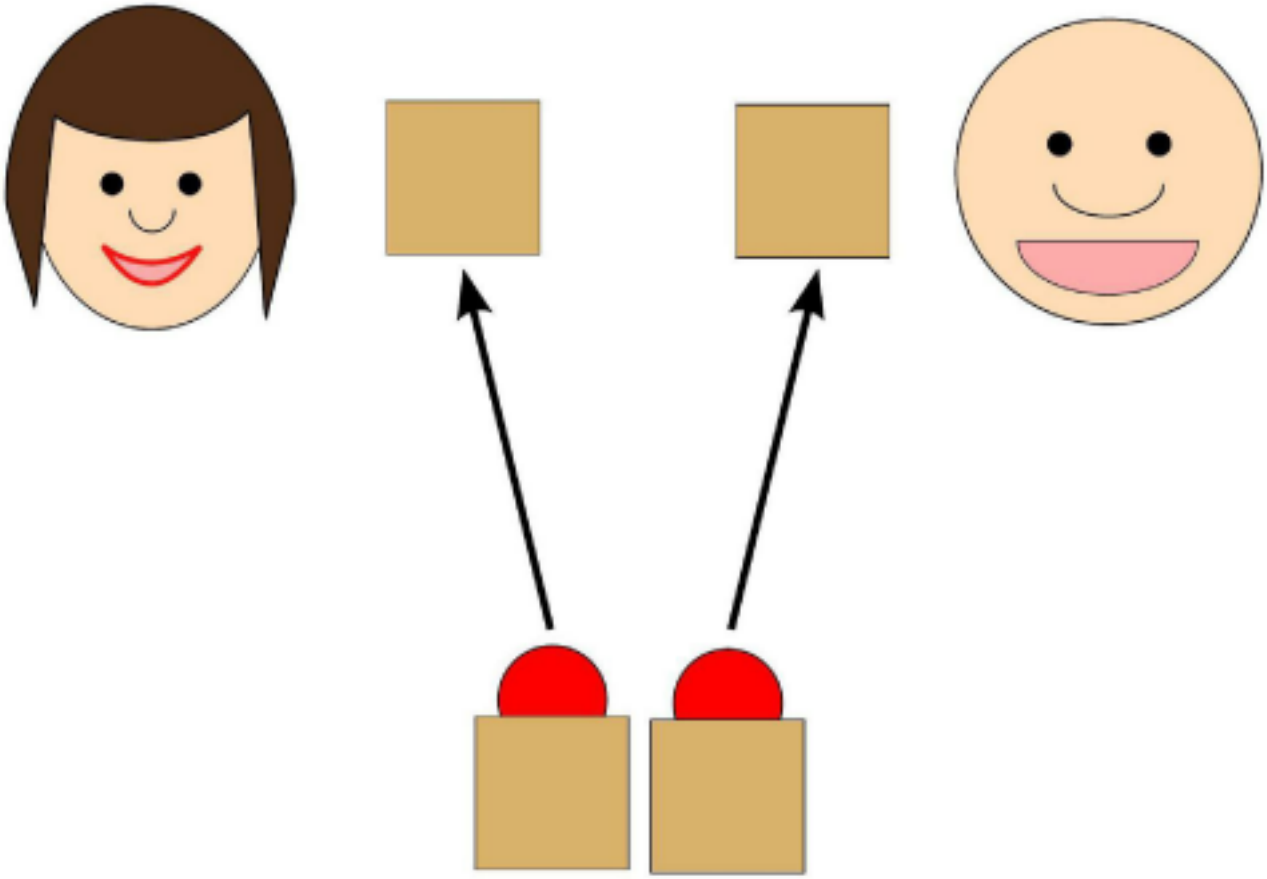
But they always have the same color!

但是箱子里的球总是有相同的颜色!



Alice and Bob do not know what is in each box. Alice and Bob do know that the contents of their boxes are the same. How?

艾丽丝和鲍勃不知道每个箱子里是什么。艾丽丝和鲍勃知道两个箱子里的东西是相同的。那我们能知道吗？

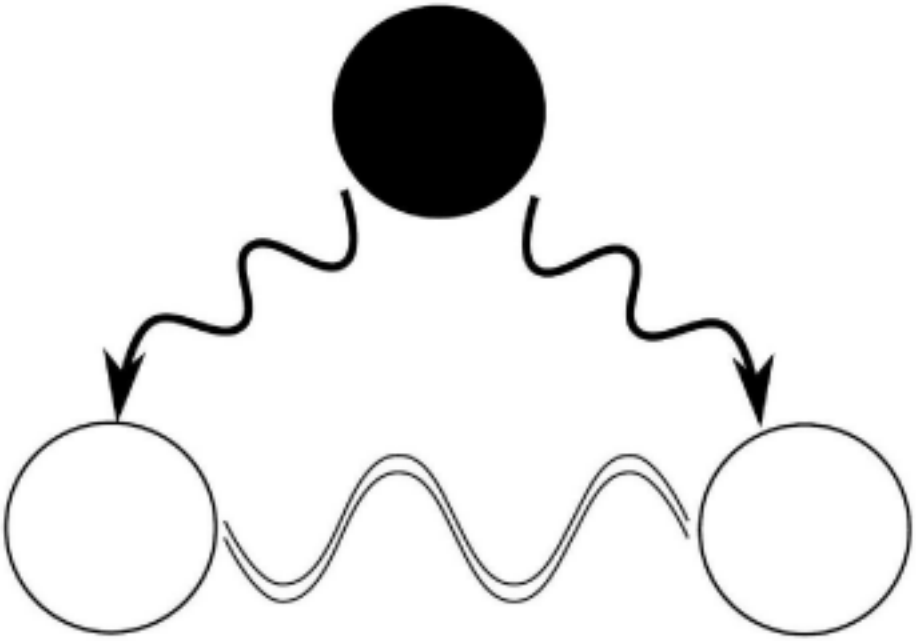


Because we put the balls in the boxes, we always know what color is in each box!

因为我们把球放到箱子里，

我们一定知道每个箱子里

的球是什么颜色！



In quantum physics, a particle can decay into two entangled particles.

在量子物理中，一个粒子
能够衰退成两个
纠缠的粒子。

Entangled particles share a special bond.

纠缠的两个粒子共享
一种特殊的纽带。

When one is measured to be red, the other will be red.

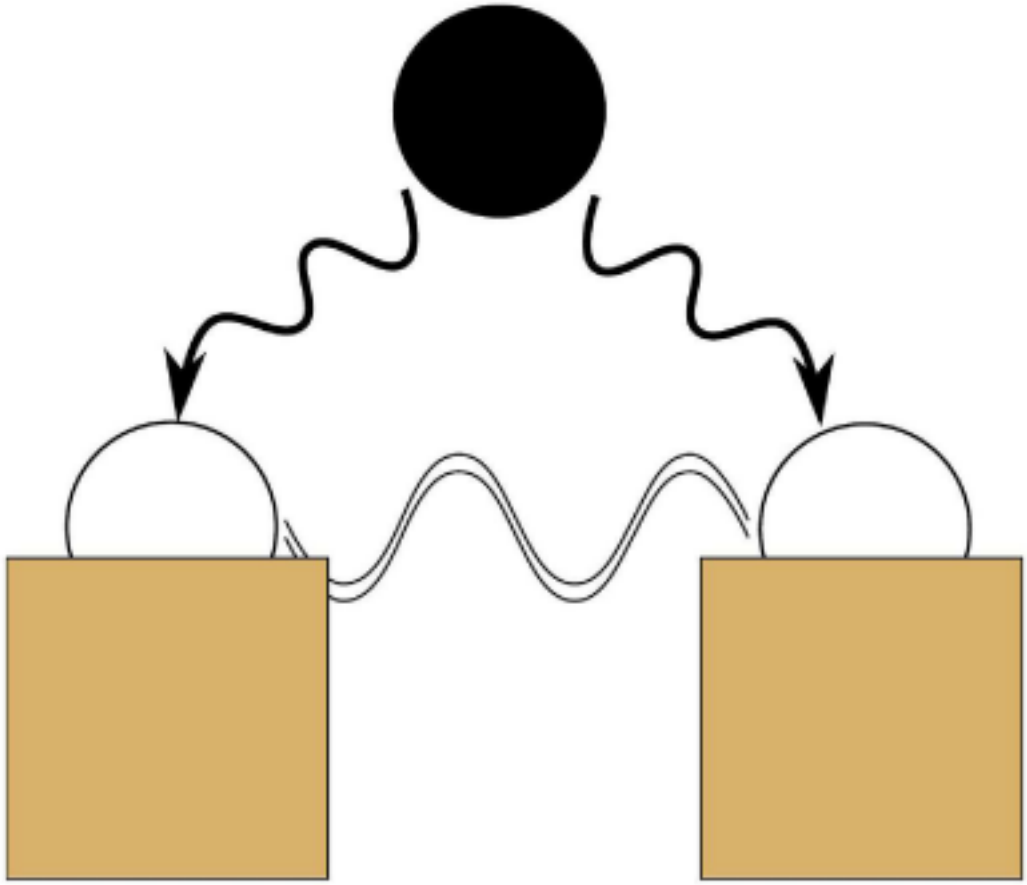
When one is measured to be blue, the other will be blue.

如果一个粒子被测量是红色，

那么另一个粒子也将是红色。

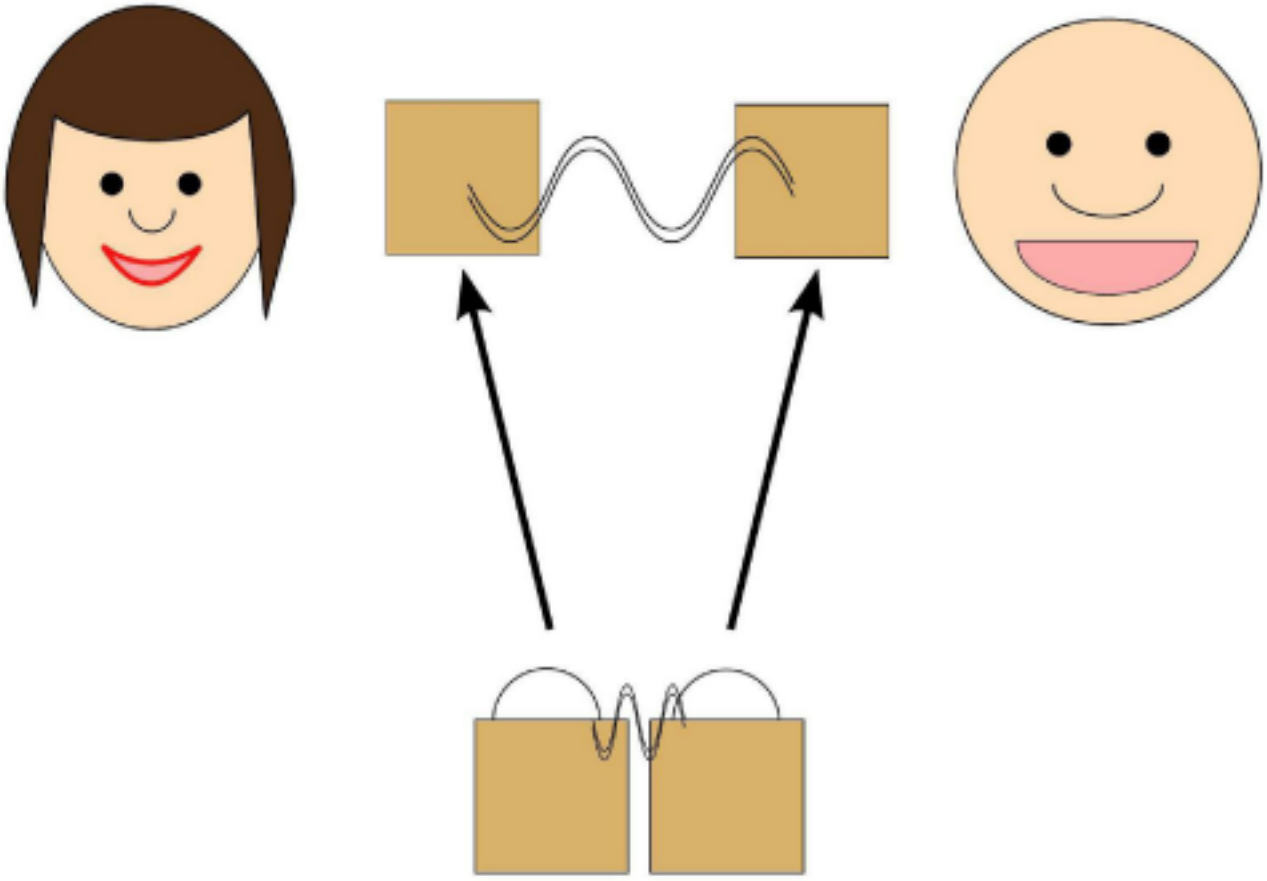
如果一个粒子被测量是蓝色，

那么另一个粒子也将是蓝色。



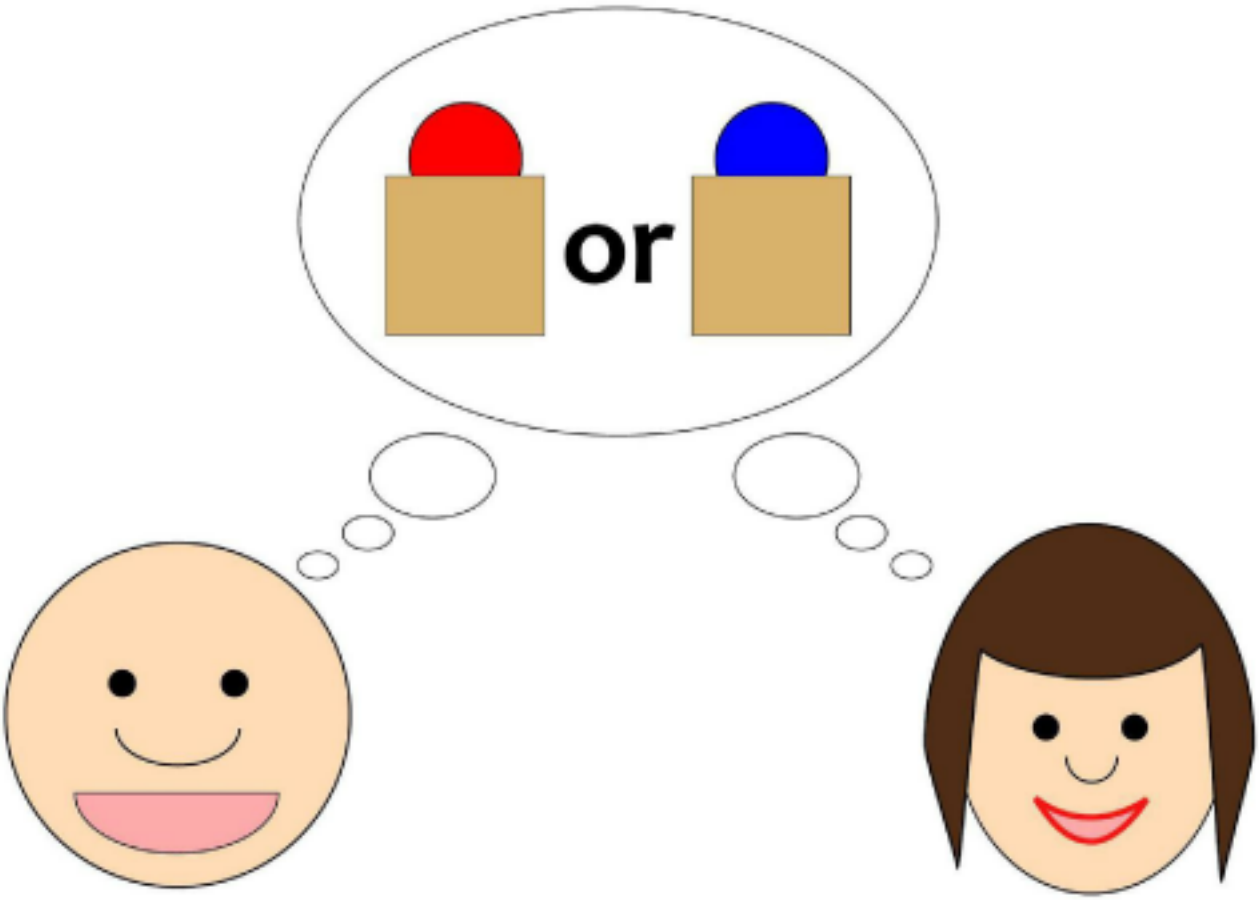
We let the entangled particles decay into the two boxes.

我们让纠缠的俩粒子衰退到两个箱子中。



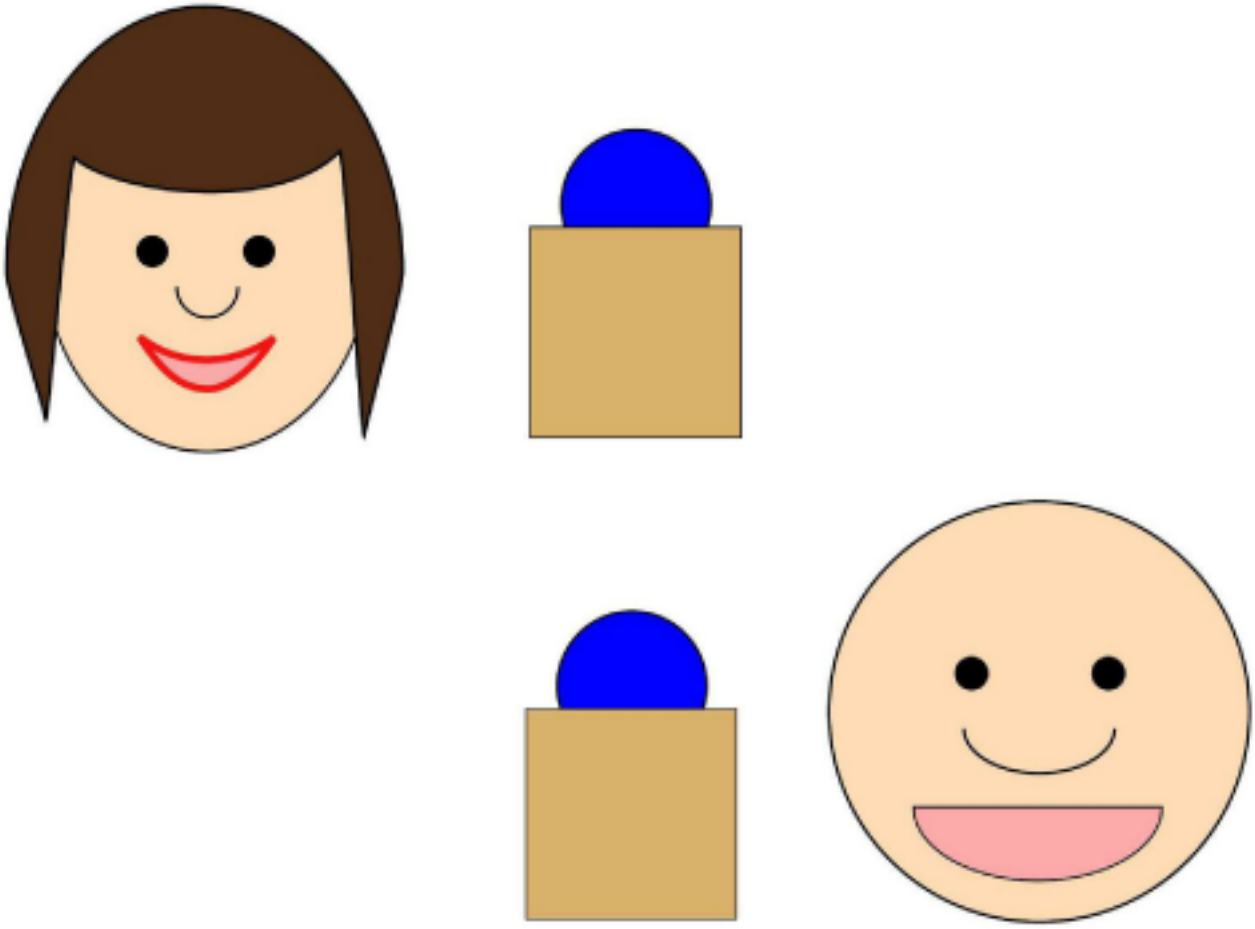
We give the boxes
to Alice and Bob.

我们把两个箱子给
艾丽丝和鲍勃。



Alice and Bob do not know what color they will find.

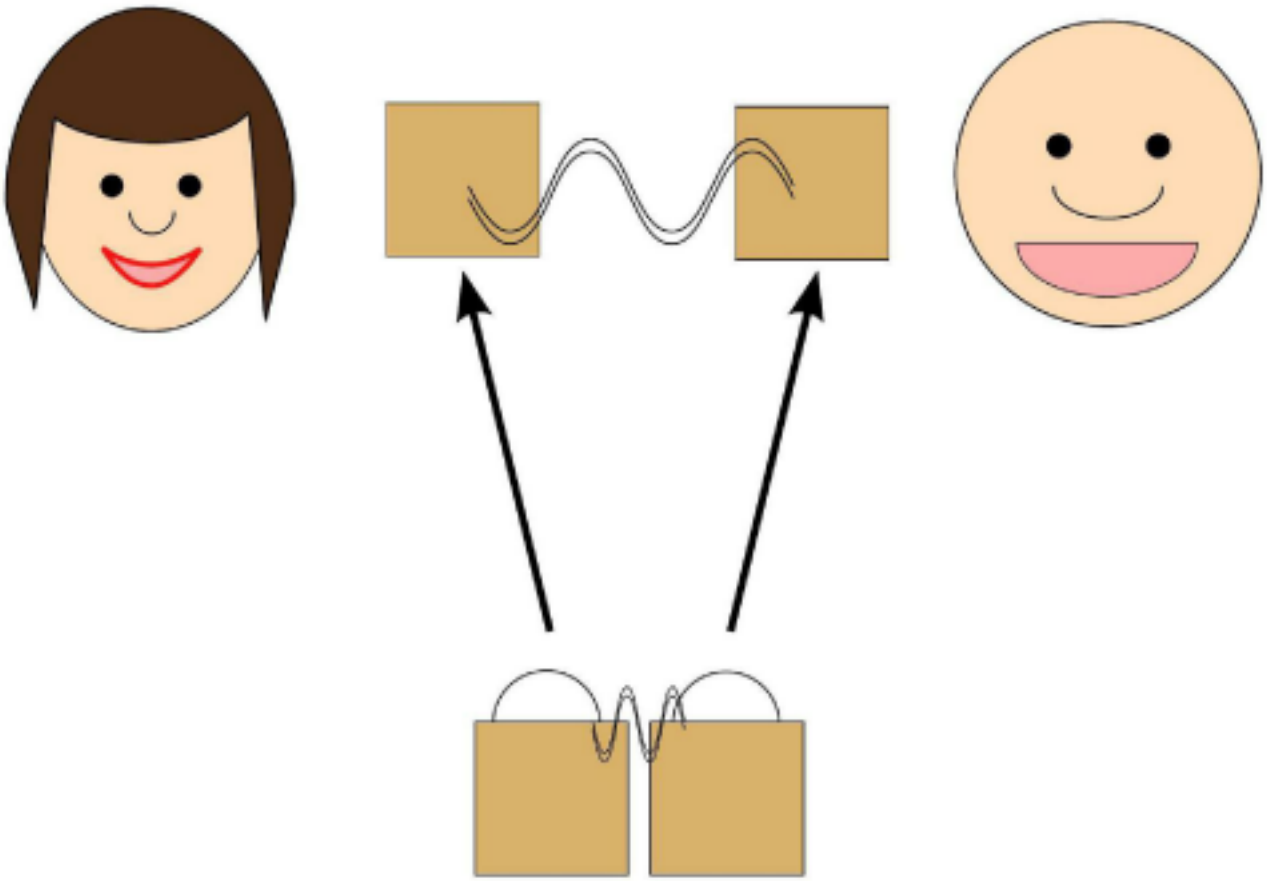
艾丽丝和鲍勃不知道
他们会发现什么颜色。



And they always find the same color!

并且他们总是会发现

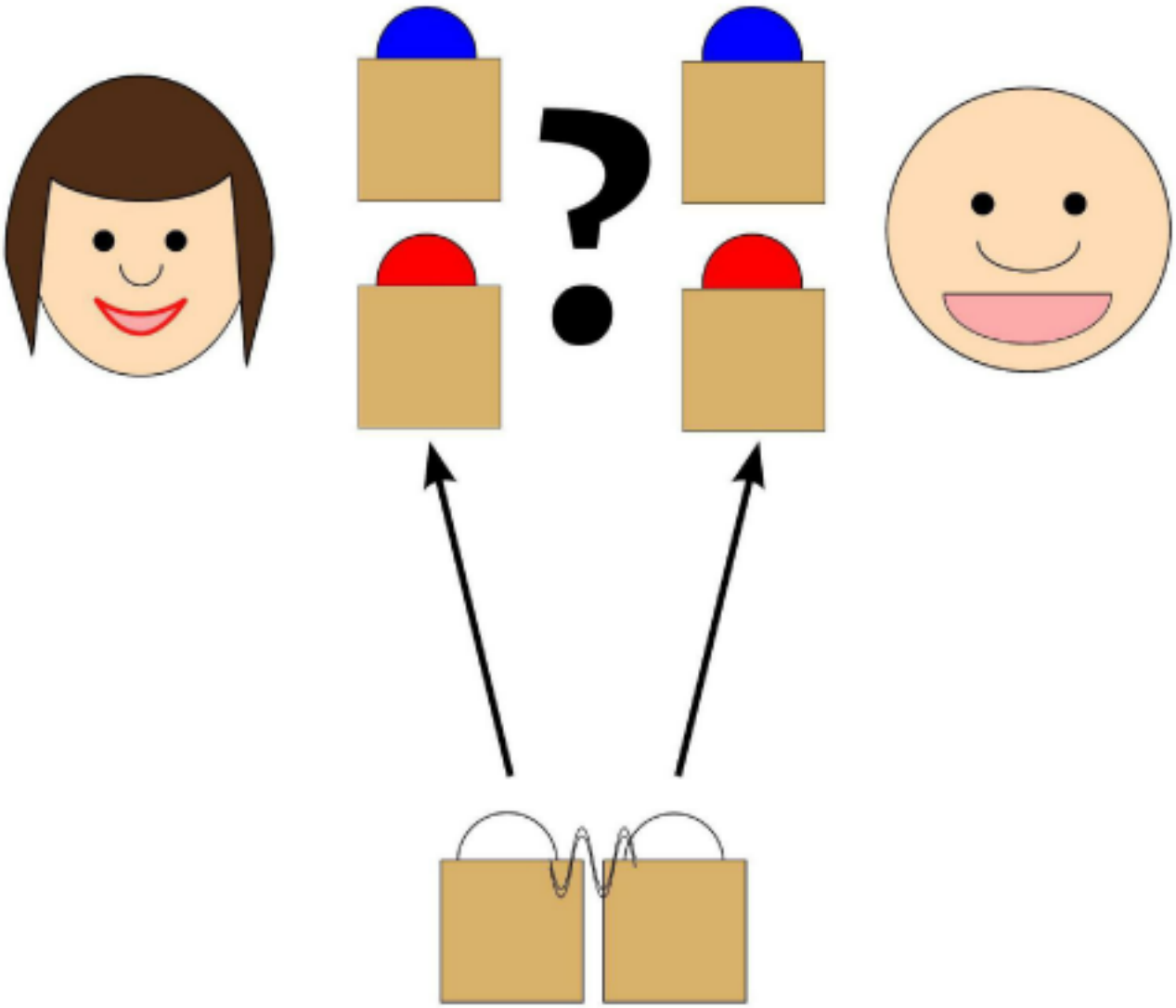
相同的颜色！



But this time even we do not know what they will find.

但是这一次连我们也

不知道他们会发现什么。

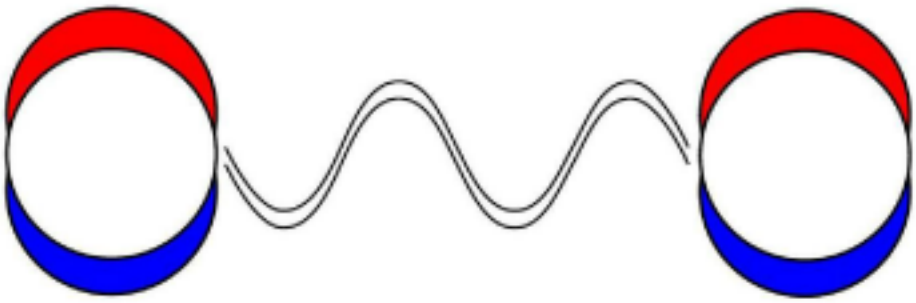


In fact, no one can know what Alice and Bob will find.

事实上，没有人能够知道

艾丽丝和鲍勃将会发现什么。

It is as if the particles decide what color they will be the moment they are measured.



And this is true no matter how far apart they are.

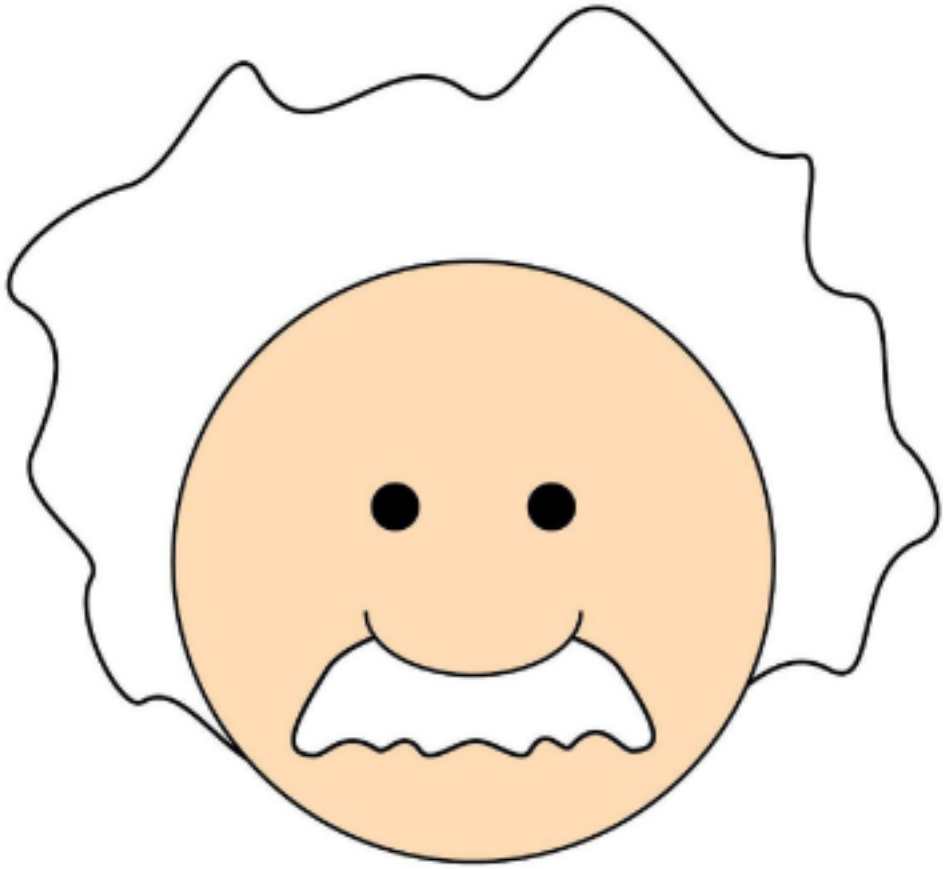
这看起来就像当粒子俩被测量的时刻，粒子俩一起决定将是哪种颜色。

并且不管粒子俩离开多远，都是这样的情况。

You are right, Baby,
that is strange!

你很正确，宝宝，

那很奇怪！

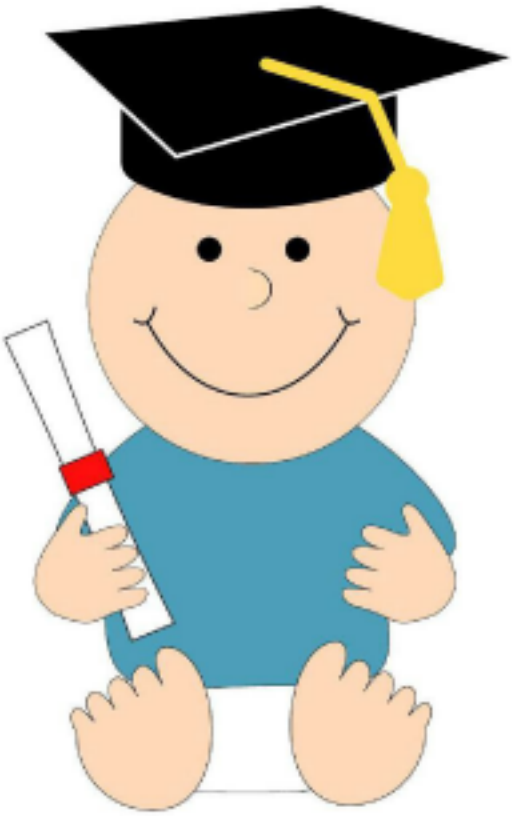


Albert Einstein called this
"spooky action at a distance."

阿尔伯特·爱因斯坦把
这种现象称作
“远距离的幽灵作用。”

No one really understands
the nature of entanglement.

没有人真正懂得纠缠
现象的秘密。



Baby, you could be the first to understand it!

宝宝，你也许可以成为第一个懂得纠缠秘密的人！