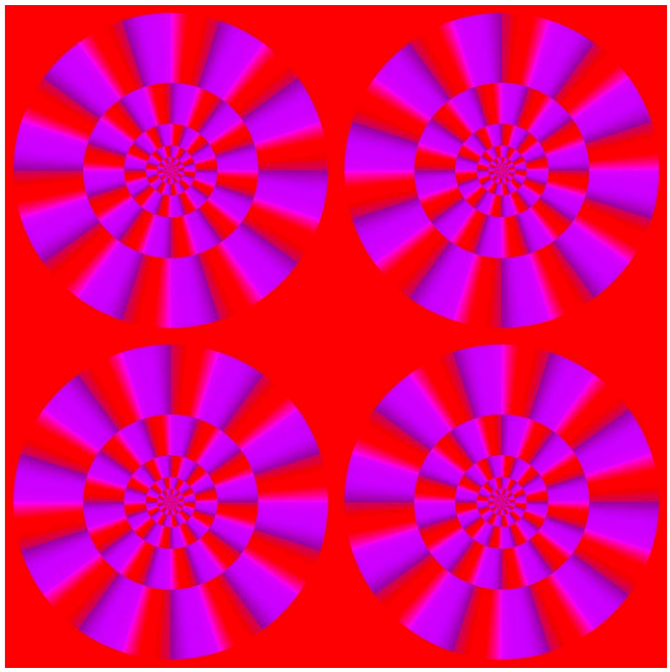
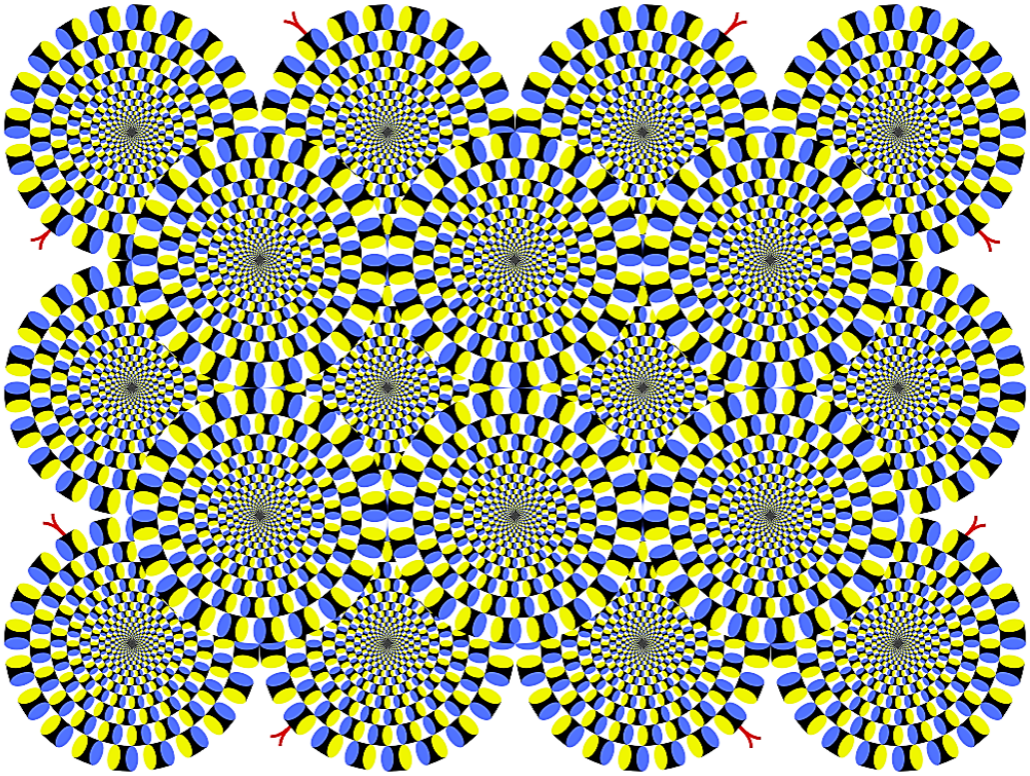
Are the circles still or rotating?





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The Association for Research in Vision and Ophthalmology

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Answers

Are the circles still or rotating?

Clearly there is no motion in the images. The rotating illusions are called “Peripheral Drifts” and are a motion illusions based on repeating, asymmetric luminance patterns.

These illusions work on our peripheral vision (hence the illusion technical name) — when you don’t look directly at something but instead keep it away from your center of vision. The rotating images grind to a halt if you stare at just one part of the image. On the other hand, it keeps going if you keep looking around. So eye movements are important. However, the illusory motion is not actually caused by the motion of the image across your retina. Instead, what matters is that the image be at different positions on the retina from time to time. In fact, briefly flashed images appear to rotate like crazy, even if there’s no time to move your eye across the images.

There have been several papers published trying to explain these illusions, but the mechanics of it (why it works) are not fully understood. You need to have a series of shapes that change in luminance (brightness, that is, or have a change in contrast from shape to shape) and it helps to have them arranged in a circle.

One idea is that our brains process high contrast regions (like where the yellow meets the black in the second image) faster than low contrast ones (like where blue meets black). If you have a series of shapes of different contrasts, they are physically processed at different times in the brain. This is a separate mechanism in your brain than the part that processes motion, however, and that part gets the data from high and low contrast areas at different times, so it’s fooled into thinking there’s motion.

Rotating images by A. Kitaoka