

Focusing with a spiral lens

The spiral-shaped pattern of the contact lens shown here allows the wearer to clearly see multiple objects at different distances. Progressive lenses and multifocal contacts also make it possible to focus on objects at various distances. But a wearer's peripheral vision may be reduced with progressive lenses, and multifocal contact lenses lose their focusing capabilities when the irises constrict. Spiral contacts avoid those problems, and they work well for different pupil diameters as lighting conditions change. The proof-of-concept lens, made by

Bertrand Simon of the Institut d'Optique Graduate School in Paris-Saclay and colleagues, could find applications in eye care or be incorporated into miniaturized imaging systems.

The unique, free-form design of the spiral lens causes refracted light to twist like a corkscrew around the axis of travel. The result is that the individual light rays meet at multiple focal points, and objects at multiple distances are clearly defined. The researchers' initial simulations and measurements show that the spiral lens works just as well as a trifocal contact lens at smaller apertures—the holes through which light can pass—and better at larger apertures. (L. Galinier et al., *Optica* **11**, 238, 2024; image courtesy of Laurent Galinier.)

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