A team led by scientists at the University of Washington has designed and tested a 3D-printed metamaterial that can manipulate light with nanoscale precision. As they report in a paper published Oct. 4 in the journal Science Advances, their designed optical element focuses light to discrete points in a 3D helical pattern.

The team's design principles and experimental findings demonstrate that it is possible to model and construct metamaterial devices that can precisely manipulate optical fields with high spatial resolution in three dimensions. Though the team chose a helical pattern — a spiral helix — for their optical element to focus light, their approach could be used to design optical elements that control and focus light in other patterns.

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