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Initial experiments could include proof-of-concept amplification of modes exhibiting hyperbolic dispersion in waveguides consisting of noble metals and III-V semiconductors. More advanced work includes increasing resolution of hyperlenses and fidelity of optical cloaks using optical gain based on these proof-of-concept experiments. Additionally, this work demonstrates that active waveguides may support guided modes at telecommunication frequencies to arbitrarily small transverse dimensions, limited only by fabrication technologies.

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