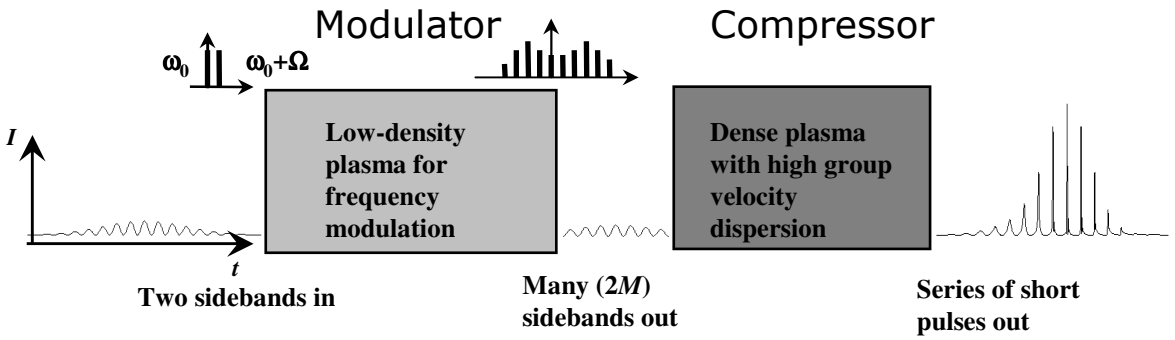
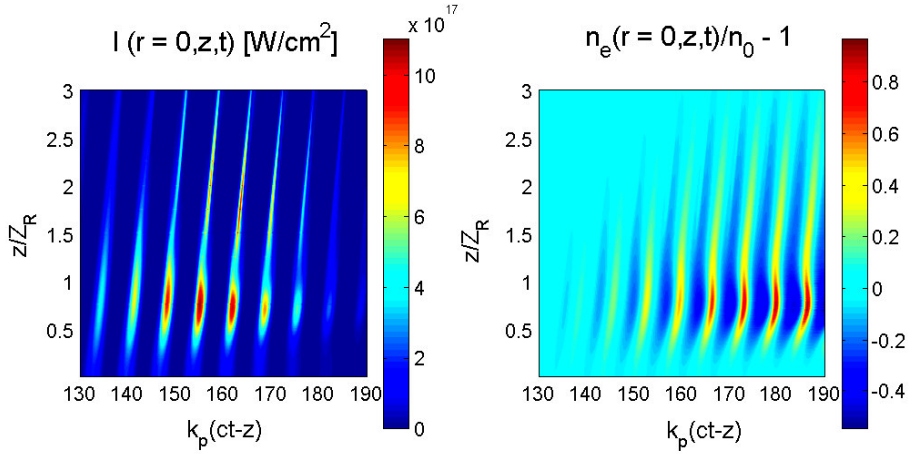
# Compression of laser radiation in plasmas via electromagnetic cascading

## Schematics of the two-stage compression




## Single-stage compression in 3D geometry




PLASMA PHYSICS

### Bright sparks

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Two researchers from the University of Texas at Austin have identified a promising way to amplify laser power using a plasma of ions and electrons. If the technique holds up in experiments, it could be used to build desktop particle accelerators for medical applications and fundamental physics research.

Serguei Kalmykov and Gennady Shvets calculate that a laser beam travelling through a dense plasma will create a wave that focuses the laser light into a train of sharp pulses — each about 10 to 100 times as intense as the initial beam. A similar technique has been tested with low-power lasers and standard gases, but the duo asserts that using a plasma could push the power of the laser pulses to a thousand trillion watts.


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