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【234】Optical link through fog and clouds: clearing a path with laser filamentation

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We present here a method that allows data transfer through fog and clouds, based on the opto-mechanical displacement of the water droplets instead of directly interacting with them. We experimentally demonstrated this method, which is based on the use of two lasers and the detection of a 1 GHz amplitude modulated sinusoidal signal. A high peak power pulsed laser generates the cloudless channel while a co- or counter-propagating low power laser carries information through the transmittive channel. Our experiment has been carried on a laboratory-scale fog length, with a typical water droplet density more than 100 times higher than that of real fog or cloud, hence an optical density comparable to a real fog.

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