

A simple experiment on laser mode recognition using optical injection

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Abstrak

An experiment demonstrating the principle of mode recognition has been performed. In the experiment, a He-Ne laser with phase synchronized TEM₀₁ mode is used. This laser has two stable (bistable) states corresponding to the emission of a right- and left- hand helical waves. Injection of light of one state can switch the laser emission to this state. A hologram is used to convert an image to the state of the laser and in turn irradiation of the image into the hologram produces radiation corresponding to the state. Injection of this radiation into a second laser causes the laser switch to the respective state and remain in that state. A second hologram convert the laser states into two images and using the second hologram, the two images can be recognized, distinguished and stored.