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Diode pumped continuous wave Cs vapor laser with 10W output RANDALL KNIZE, BORIS ZHDANOV — We have demonstrated an efficient Cesium vapor laser pumped by a continuous wave narrowband Laser Diode Array (LDA). To obtain a high efficiency, it is necessary to narrow the linewidth of the LDA pump radiation to match the Cs atom absorption line. At a buffer gas pressure close to 1 atm the Cs absorption linewidth is about 15 GHz, which is much less than typical linewidth of commercially available LDAs (about 1 THz). An external cavity with wavelength sensitive narrowband filter was used to narrow an LDA linewidth to below 1 GHz. A heated 2 mm Cs cell with 500 torr ethane was assembled inside a half confocal laser cavity. The spatially multimode pump beam was focused into the cell. The experiment yielded about 10 W output power at 25 W pump power. The Cs vapor laser operated at 894 nm in single longitudinal and fundamental transverse modes. The developed laser can be used for laser cooling experiments. We acknowledge support from NSF, AFOSR and JTO-HEL..

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