

Abstract Submitted
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Generation of single frequency blue light by highly efficient harmonic generation of IR laser diodes in resonance build-up cavities using nonlinear crystals ALI KHADEMIAN, KOUSTUBH DANEKAR, NAFISEH AFLAKIAN, DAVID SHINER, University of North Texas — Blue and UV lasers have a wide variety of applications, including atomic spectroscopy. We are particularly interested in 486 nm and 243 nm for hydrogen spectroscopy. Blue and UV laser diodes are at the early stages of development. At this time, harmonic generations (HG) is a viable technique to produce blue and UV light with well developed fiber coupled IR laser diodes. We recently reported a polarization maintaining (PM) fiber to fiber conversion efficiency of 71 percent overall. We used a PPKTP (Periodically Poled Potassium Titanyl Phosphate) crystal in an external build-up cavity. The 600 mW of blue at 486 nm was generated from second HG of a 972 nm PM fiber coupled laser diode [1]. PPKTP presents blue absorption (BA) and blue light induced IR absorption (BLIIRA) which cause thermal instability and inefficiency in the buildup cavity. Another crystal, PPSLT (Periodically Poled Lithium Tantalite) promises less BA and less BLIIRA. Our latest results for producing 486 nm using PPSLT and comparison with PPKTP will be presented.

[1] Koustrubh Danekar, Ali Khademian, and David Shiner, *Opt. Lett.* 36, 294 (2011)

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