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Yb-doped chirped pulse amplification system[1] FEDERICO FURCH, Colorado State University, BRENDAN REAGAN, Colorado State Univesity, BRADLEY LUTHER, JORGE ROCCA, Colorado State University — A very compact, all diode pumped chirped pulse amplification system was developed based on Yb-doped gain materials. A passively mode-locked Yb:KYW oscillator in combination with a photonic crystal fiber was used to seed two different regenerative amplifiers. Energies up to 10mJ at 20Hz were obtained for cryo-cooled Yb:YLF and 6.5mJ between 10Hz and 30Hz for Yb:YAG at cryogenic temperatures also. For Yb:YAG it was possible to blue shift the spectrum of the oscillator to match the wavelength of the amplifier and the seed beam without using the non-linear fiber. The entire system (oscillator-stretcher-amplifier) has a footprint of less than $2m^2$. After compression it should be possible to obtain amplified pulse duration of <8ps.

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