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Polariton Laser in a Wire-Like Microcavity Based on a Sub-Wavelength Grating[1] BO ZHANG, SEONGHOON KIM, ZHAORONG WANG, University of Michigan, SEBASTIAN BRODBECK, CHRISTIAN SCHNEIDER, MARTIN KAMP, SVEN HOEFLING, HUI DENG, University of Wuerzburg — We report exciton-polariton lasing in a wire-like GaAs microcavity. The microcavity is sandwiched between a high-index-contrast sub-wavelength grating as the top mirror and a distributed Bragg reflector as the bottom mirror. The grating has dimensions 7.5 microns by 30 microns. The photoluminescence spectrum in momentum space shows discrete levels along the more tightly confined direction and quasi-continuous dispersion along the orthogonal direction. Unlike in the zero dimensional devices where polariton lases at ground state, in the wire-like device we observe lasing at a state that emerges between first and second lowest energy bands.

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