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Monolayer Tungsten Disulfide Laser YU YE, ZI JING WONG, UC Berkeley, XIUFANG LU, University of Science and Technology of China, XINGJIE NI, HANYU ZHU, UC Berkeley, XIANHUI CHEN, University of Science and Technology of China, YUAN WANG, XIANG ZHANG, UC Berkeley — Two-dimensional van der Waals materials have opened a new paradigm for fundamental physics exploration and device applications because of their emerging physical properties. Unlike gapless graphene, monolayer transition-metal dichalcogenides are two-dimensional semiconductors that undergo an indirect-to-direct band gap transition, creating new optical functionalities for next-generation ultra-compact photonics and optoelectronics. Here, we report the realization of a two-dimensional excitonic laser by embedding monolayer tungsten disulfide in a microdisk resonator.

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