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Progress of Experiments in China's Underground Laboratories （Invited speech）

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Invited speech
China's underground laboratories have emerged as key players in the global effort to explore fundamental physics. The Jinping Underground Laboratory (CJPL), situated deep within the mountains of Sichuan, hosts several cutting-edge experiments. The PandaX-4T experiment, employing a two-phase liquid xenon detector, leads the search for dark matter and precision neutrino measurements. The PandaX-III experiment, utilizing high-pressure xenon gas detectors, aims to search for neutrinoless double beta decay, providing insights into the nature of neutrinos. The China Dark Matter Experiment (CDEX) uses high-purity germanium detectors to probe low-mass dark matter, while the Jinping Underground Nuclear Astrophysics (JUNA) experiment investigates key nuclear reactions relevant to stellar evolution and nucleosynthesis. Meanwhile, the Jiangmen Underground Neutrino Observatory (JUNO), located 700 meters underground, is designed to study the neutrino mass hierarchy and offers a wide array of physics goals, including the precise measurement of oscillation parameters and detection of supernova neutrinos. This talk will summarize recent progress and discoveries from these pioneering experiments.

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