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Laser Spectroscopy of $^{176}Lu^+$ RATTAKORN KAEWUAM, ARPAN ROY, KYLE ARNOLD, MURRAY BARRETT, Centre for Quantum Technologies, National University of Singapore, 3 Science Drive 2, 117543 Singapore — Singly ionized lutetium $^{176}Lu^+$ possesses low-lying metastable D levels where the corresponding decay channels have been proposed as promising optical clock transitions. Here we report laser spectroscopy of the $^3D_1$, $^3D_2$, $^3P_0$, and $^3P_1$ levels relative to the $^1S_0$ ground state. The hyperfine structure for each level, the allowed E1 transitions for detection and cooling, and clock transitions are all determined. These measurements provide a useful reference for establishing optical clock operation with this ion.

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