

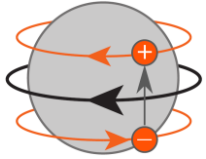
Fine and Hyperfine Interactions in $^{171}\text{YbOH}$ and $^{173}\text{YbOH}$



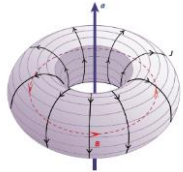
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Why YbOH: YbOH isotopologues sensitive to P,T-violating physics, are laser coolable, and provide robust systematic error rejection

$^{173}\text{YbOH}$: ^{173}Yb Nuclear Magnetic Quadrupole Moment (NMQM)

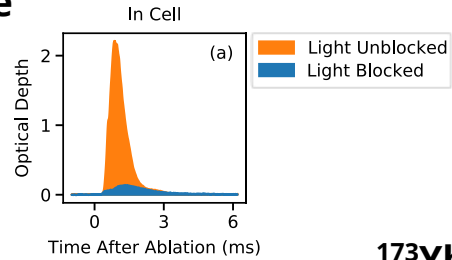


$^{171}\text{YbOH}$: Nuclear Spin Dependent Parity Violation (NSD-PV)



We performed absorption measurements on cryogenic buffer gas cooled sample and LIF measurements on molecular beam

Chemical Enhancement and spectroscopy:

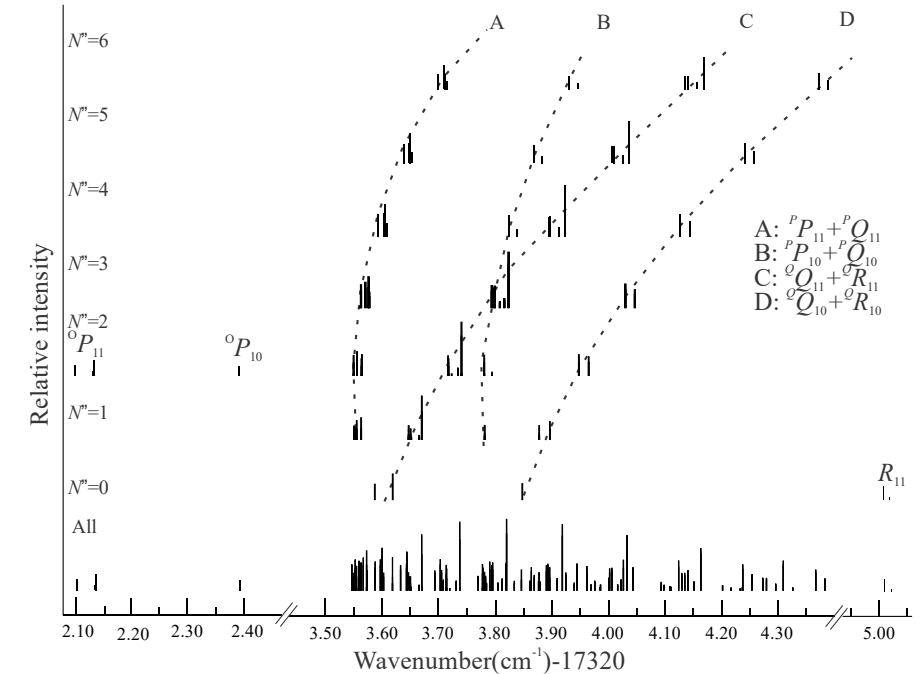
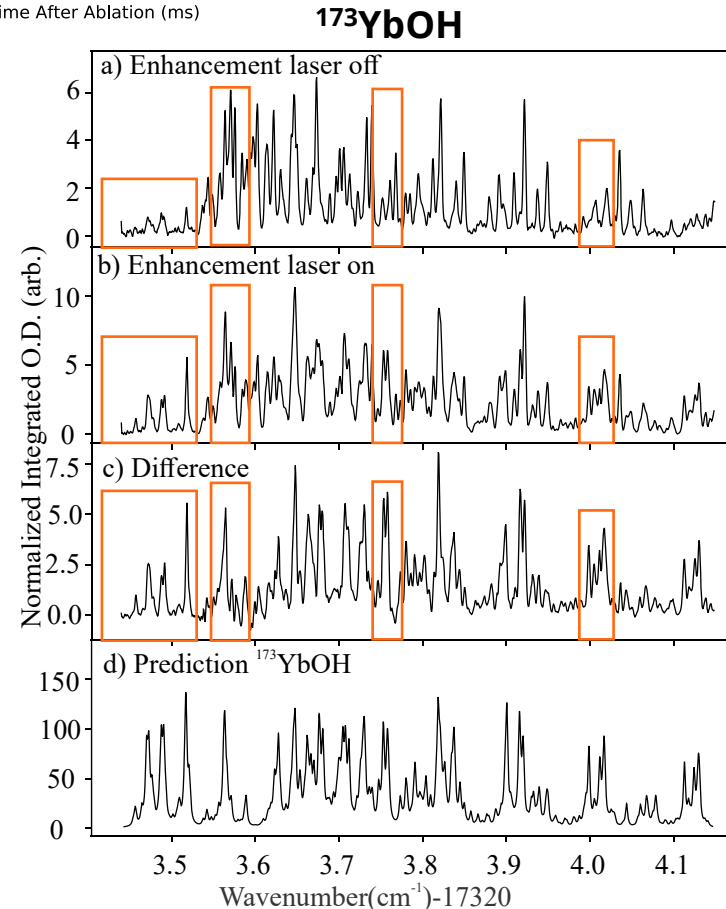


Extremely congested spectrum due to multiple Isotopologues. Utilized laser-enhanced chemical reactions to isolate the pure spectrum of $^{171,173}\text{YbOH}$

Results:

$^{173}\text{YbOH}$: Assigned 124 transitions to 94 features
 $^{171}\text{YbOH}$: Assigned 68 transitions to 64 features

Fit to effective Hamiltonian model to extract fine and hyperfine parameters



Paper on Arxiv: [arXiv:2104.11769](https://arxiv.org/abs/2104.11769)