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The N- and CPT- joint resonance: Theory, experiment and implications for novel compact frequency references. MICHAEL CRESCIMANNO, Youngstown State University, IRINA NOVIKOVA, YANHONG XIAO, CINDY HANCOX, DAVID PHILLIPS, RON WALSWORTH, Harvard-Smithsonian Center for Astrophysics — There has been considerable recent interest in the use of the hyperfine N-resonance in clock applications. We describe the solution of a quantum optics model of the joint N- and CPT- optical resonance with particular attention to its lineshape and lightshift/detuning shift behavior. Recent experimental progress allows a direct detailed test of aspects of this theory. This has led to a preliminary view of the promise and problems of this approach to compact frequency standards.

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