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Searching for Lorentz violation with new Ives-Stilwell tests MICHAEL HOHENSEE, DAVID F. PHILLIPS, RONALD L. WALSWORTH, Harvard-Smithsonian CfA — Ives-Stilwell measurements have been used to measure relativistic time dilation effects and place constraints upon directional and frame-dependent anisotropies of the speed of light. Over the past seventy years, great improvements have been made upon the original 1938 experiment of Ives and Stilwell, but are now approaching the practical limits of what can be achieved by such tests at reasonable scales. Common to every measurement has been reliance upon optical transitions and continuous wave spectroscopy. We propose using coherent two-photon processes and coherent pulsed spectroscopic techniques to move beyond existing scaling limits.

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