

Abstract Submitted
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Probing Contextuality with Pre- and Post-selection JEFF TOLLAKSEN, Center for Quantum Studies, Department of Physics and Department of Computational and Data Sciences, College of Science, George Mason University — By analyzing the concept of contextuality (Bell-Kochen-Specker) in terms of pre-and-post-selection (PPS), it is possible to assign definite values to observables in a new way. Physical reasons are presented for restrictions on these assignments. When measurements are performed which do not disturb the pre- and post-selection (i.e. weak measurements), then novel *experimental* aspects of contextuality can be demonstrated including a proof that every PPS-paradox with definite predictions implies contextuality. Certain results of these measurements (eccentric weak values with e.g. negative values outside the spectrum), however, cannot be explained by a “classical-like” hidden variable theory. Surprising theoretical implications are discussed.

Jeff Tollaksen
Center for Quantum Studies, Department of Physics and
Department of Computational and Data Sciences, College of Science, George Mason University

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