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Fringe Visibility and Which-Way Information: Duality Relations RICHARD BARNEY, AJ RASMUSSEN, JEAN-FRANCOIS VAN HUELE, Brigham Young University — The principle of wave-particle duality states that quantum objects cannot exhibit full wave and particle characteristics simultaneously. In simple cases such as a two-slit experiment or a Mach-Zehnder interferometer, fringe visibility is limited by the amount of which-way information available. For these cases we quantify the connection between fringe visibility and which-way information. We also study to what extent, for arbitrary which-way schemes, the Heisenberg uncertainty relation has been used to derive these relations in the literature.

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