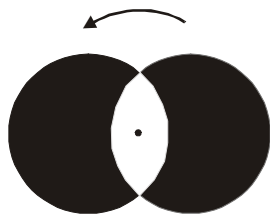


## PERCEIVED MOTION TRANSPARENCY CAN OVERRIDE LUMINANCE / COLOR CUES WHICH ARE INCONSISTENT WITH TRANSPARENCY

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**Background.** Two superimposed moving gratings can be perceived either as a plaid moving rigidly or as two gratings sliding over each other (Wallach '35, '96; Adelson & Movshon '82). Stoner et al. ('90, '96) showed that the perception of motion transparency was affected by whether the luminance of the gratings' intersections was consistent with physical transparency or not.

**Purpose.** Will luminance cues affect motion transparency also in other ambiguous motion displays where globally rigid and transparent, non-rigid interpretation compete? **Methods.** The stimulus consisted of two overlapping disks. When rotated rigidly about its center, the figure



splits after a while and two disks are perceived to move independently sliding over each other in circular translational motion while staying upright (Wallach '76). We manipulated the luminance/color of the intersection region: we used combinations inconsistent (Figure) or consistent with transparency. Observers were required to press a button as soon as they perceived the disks to move independently. **Results.**

Transparent motion was perceived for all tested combinations of luminance and color, including all inconsistent configurations. Nevertheless, a slight delay (~100ms longer) was found for luminance configurations inconsistent with transparency.

**Conclusion.** Segmentation based on motion can override conflicting luminance cues. We propose that this happens when motion cues strongly bias the perception towards sliding motion, and offer an energy-based model to account for these motion biases. (<http://cns.nyu.edu/~hupe/arvo00demo>).

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