

The effect of color contrast on Glass pattern perception

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We used a variant of Glass patterns composed of randomly distributed tripoles, instead of dipoles, to estimate the influence of color contrast on perceptual grouping. Each tripole contained an anchor dot and two context dots. Grouping the anchor dot with one of the context dot would result in a global percept of a clockwise (CW) spiral while grouping with the other dot, a counterclockwise (CCW) spiral. All dots in each pattern were modulated in the same color direction but in different contrasts. There were four types of patterns, modulating in +/- (L-M), and +/- S respectively. The observer was to determine whether the spiral in each trial was CW or CCW. The probability of the anchoring point grouping with one of the context dot increased with the color contrast of that context dot to a critical level and was a constant as context dot contrast further increased. The grouping probability, however, decreased with the contrast of the other dot. This trend was the same for all isoluminance color direction tested but was different from the inverted U-shaped function for luminance contrast as previously reported. Our result cannot be explained by existing models for perceptual grouping but a divisive inhibition model.

Keywords: Glass pattern, color contrast, contrast gain control, perceptual grouping

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