

Rotating Tilted Line Illusion (Gori-Hamburger-Illusion)

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Stimulus pattern: The *Rotating Tilted Line-Illusion* in its simplest form arises in a circular pattern of 120 black, radial lines tilted to the right and presented on a white background (Figure 1). In its more complex form, the pattern is embedded in a context of an equal number of lines oriented in the opposite direction (Figure 2).

Illusory Effects: When one approaches the stimulus pattern, the radial lines appear to rotate in a counterclockwise direction, whereas when one recedes from it, they appear to rotate clockwise. In the complex version of the pattern, the illusory rotation is stronger and there may be some residual counterrotation in the surround.

How was the illusion discovered? This illusion was found while working on variations of Leviant's Enigma-Figure (Leviant, 1996). The question was whether the rotary motion on the colored rings could be attenuated or abolished by tilting the radial lines relative to the normal. The *Rotating Tilted Line-Illusion* emerged when the Enigma-Figure was stripped down to a single circle of tilted lines as illustrated in Figure 1.

Why is this new illusion interesting? A similar illusory rotation has been reported by Pinna-Brelstaff (2000) and later on by Kitaoka (2000). However, their inducing patterns are different from ours as they use tiles with dark and bright edges that are subject to the aperture effect. In comparison, the illusory rotation in the pattern presented here probably derives from a difference in motion vector based on the sequential change of orientation of the lines. The enhanced rotation observed in the complex version of this pattern may additionally arise from the difference in phase and orientation of the abutting lines. We are planning to check this hypothesis by systematically varying the angle at which the grating lines abut each other.

References:

Kitaoka, A. (2000). www.ritsumei.ac.jp/~akitaoka/rotate-e.html

Leviant, I. (1996). Does 'brain-power' make Enigma spin? *Proceedings of the Royal Society London*, 263, 997-1001.

Pinna, B. & Brelstaff, G.J. (2000). A new visual illusion of relative motion. *Vision Research*, 40 (16), 2091-2096.