

ThG4. Evoked Potentials and Psychophysics of Spatial Phase Sensitivity.* ILSE E. GAYL[†], HANS STRASBURGER, INGO RENTSCHLER, AND RUDI HILZ. *Institute for Medical Psychology, University of Munich. Schillerstrasse 42, 8000 Munich 2, Federal Republic of Germany.*—We examined psychophysical and electrophysiological measures of visual sensitivity to spatial phase. The subjects were presented with one-dimensional gratings consisting of fundamental and third harmonic (f and $3f$) components in a 3:1 contrast ratio. Stimuli at a given spatial frequency differed from one another in the spatial phase of the $3f$ component relative to the fundamental. The subjects performed psychophysical discrimination tasks with the gratings, and we measured sensitivity parameters to phase shifts away from 0° (square wave), 90° , 180° , and 270° using signal-detection-theory methodologies. We used similar complex gratings, in which the $3f$ component was temporally phase alternated with various phase angles relative to the stationary fundamental, to record steady-state visual-evoked potentials. We found systematic effects of the size of the phase shift on sensitivity by using both methods, with sensitivity to phase shift dropping at higher spatial frequencies. Sensitivity depended not only on the size of the phase shift for a given spatial frequency but also on the reference phase away from which the shift occurred. (13 min.)

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