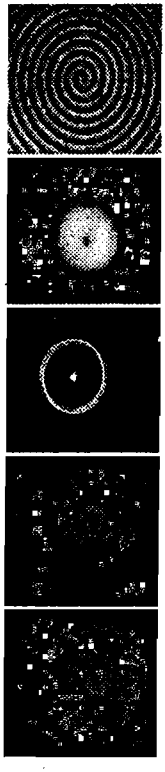
Institute of Unique Instrumentation
Russian Academy of Sciences

THE ROTOR PHASE FILTERS COUPLED WITH AXICONS AND WITHOUT THEM

Those are novel plane diffraction optical elements performed by technolody of Computer Optics. They possess a wide spectrum of operating possibilities and can't be replaced with any other optical element.



APPLICATIONS

- optical implementation of Hilbert and Hankel transforms for the coherent light field with rotational symmetry(the phase visualizing, the information optical processing);
- optical differentiation of the light fields having rotational symmetry (the image contouring, the phase retrieval);
- forming the narrow non-diffraction Bessel beams of the arbitrary order (gaseous discharge, observation of the charged particle track, the disk systems for the sound recording and playback) ;
- forming the narrow annular intensity distribution - focusing into the ring (goods marking, annular cutting of materials).

PERFORMANCE DATA OF THE PHASE ROTOR FILTERS COUPLED WITH AXICONS

- the wavelength range from 0.5 μm to 10.6 μm,
- the optical element aperture up to diameter of 80 mm,
- the spatial resolution up to 1000 lines/mm,
- the ability of forming the Bessel beam at a distance up to 500 mm with effective diameter no more than 70 μm,
- may be manufactured : as reflecting or transmitting, binary or half-toned, on the solid substrate - glass, on the flexible substrate - film.

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