

Unitary aberrations on pixellated screens

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In previous works we have imported the transformations of the Fourier group (fractional Fourier transformations, rotations and gyrations) from geometric optics to unitary transformations of pixellated images on finite two-dimensional screens. Here we follow this process for the unitary analogues of geometric optical aberrations. For square screens of $N \times N$ pixels, there are N^4 distinct aberration subgroups that are unitary, and hence subject to composition and inversion. Their classification follows the monomial basis of powers in the generating phase space variables, and the axis-symmetric subset is compared with the geometric optical counterparts.

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