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Autore	Gustafsson Björn
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Sommario/riassunto	This book exploits the classification of a class of linear bounded operators with rank-one self-commutators in terms of their spectral parameter, known as the principal function. The resulting dictionary between two dimensional planar shapes with a degree of shade and Hilbert space operators turns out to be illuminating and beneficial for both sides. An exponential transform, essentially a Riesz potential at critical exponent, is at the heart of this novel framework; its best rational approximants unveil a new class of complex orthogonal polynomials whose asymptotic distribution of zeros is thoroughly

studied in the text. Connections with areas of potential theory, approximation theory in the complex domain and fluid mechanics are established. The text is addressed, with specific aims, at experts and beginners in a wide range of areas of current interest: potential theory, numerical linear algebra, operator theory, inverse problems, image and signal processing, approximation theory, mathematical physics.