

Quantum-Like Description of Coherent State Evolution for Particle Beams in the Presence of Small Aberrations, S. DE NICOLA, Istituto di Cibernetica del CNR, Arco Felice, Italy, R. FEDELE, G. MIELE, Dipartimento di Scienze Fisiche, Università "Federico II" and INFN, Napoli, Italy, V.I. MAN'KO, Lebedev Physics Institute, Moscow, Russia - The evolution of a charged particle beam in an infinite 1-D quadrupole-like device with small sextupole and octupole aberrations is analytically and numerically described in the framework of the Thermal Wave Model. The transverse density distribution of the beam, whose initial configuration is represented by an arbitrary coherent state (Gaussian-like off-axis centred distribution), is described in terms of a Schrödinger-like equation where Planck's constant is replaced with the transverse emittance. In this quantum-like description of the transverse beam dynamics the disruption of the beam coherence is analytically and numerically investigated.