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	Nota di contenuto	Fundamentals of O*-algebras -- Standard systems and modular systems -- Standard weights on O*-algebras -- Physical applications.
	Sommario/riassunto	These notes are devoted to a systematic study of developing the Tomita-Takesaki theory for von Neumann algebras in unbounded operator algebras called O*-algebras and to its applications to quantum physics. The notions of standard generalized vectors and standard weights for an O*-algebra are introduced and they lead to a Tomita-Takesaki theory of modular automorphisms. The Tomita-Takesaki theory in O*-algebras is applied to quantum moment problem, quantum statistical mechanics and the Wightman quantum field theory. This will be of interest to graduate students and researchers in the field of (unbounded) operator algebras and mathematical physics.