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Sommario/riassunto	Matterwave interferometry is a promising and successful way to explore truly macroscopic quantum phenomena and probe the validity of quantum theory at the borderline to the classic world. Indeed, we may soon witness quantum superpositions with nano to micrometer-sized objects. Yet, venturing deeper into the macroscopic domain is not

only an experimental but also a theoretical endeavour: new interferometers must be conceived, sources of noise and decoherence identified, size effects understood, and possible modifications of the theory taken into account. This thesis provides the theoretical background to recent advances in molecule and nanoparticle interferometry. In addition, it contains a physical and objective method to assess the degree of macroscopicity of such experiments, ranking them among other macroscopic quantum superposition phenomena.