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Sommario/riassunto	Masers are observed at a range of scales - from comets, through star-forming clouds, to galactic nuclei - and have many astrophysical applications, for example measuring cosmological distances. Written for postgraduate students and professional researchers in molecular astrophysics, this volume is an up-to-date survey of the theory and observations of astrophysical maser sources and their use as astronomical tools. The book summarizes the history of the discovery of various maser molecules and lines, and discusses maser

observations on various scales. The theory is discussed in detail, including the quantum-mechanical response of the molecules, before being linked to more general radiation transfer. A discussion of spectral-line radio astronomy techniques shows how maser observations can be applied more generally to radio astronomy. The book introduces new and projected instruments, including ALMA and SKA. Additional topics address the radiation statistics of astrophysical masers, and numerical methods of analysis.
