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Autore	Happer William
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6.5 Identities; 6.6 Net Evolution; 6.7 Negligible Stimulated Emission; 6.8 High-Pressure Pumping; 6.8.1 Liouville Space
6.9 Spectral Width of Pumping Light6.9.1 Gaussian Spectral Profiles; 6.9.2 Plasma Dispersion Function; 6.10 Doppler Broadening; 7 Modulation; 7.1 Magnetic Resonance; 7.2 Modulated Light; 7.2.1 High Pressure; 7.2.2 Lower Pressure; 7.2.3 Modulated Optical Pumping Matrices; 7.3 Secular Approximation; 7.4 Attenuation of Modulated Coherence in Passingthrough the Excited State; 7.5 Examples; 7.5.1 Isolated Magnetic Resonances; 7.5.2 Zeeman Magnetic Resonances; 7.5.3 Push-Pull Pumping; 8 Light Propagation; 8.1 Induced Electric Dipole Moment; 8.2 Absorption Cross Section; 8.3 Small Magnetic Fields
8.4 Evolution of a Beam in Space and Time8.5 First-Order Propagation Equation; 8.6 Propagation of Weak Probe Light; 8.7 Faraday Rotation; 8.8 Specific Absorption; 8.9 Fluorescent Light; 9 Radiation Forces; 9.1 Mean Force; 9.2 Forces from Monochromatic Light; 9.3 Forces in Magneto-Optical Traps; 9.3.1 Repump Lasers; 9.4 Pointing Probability; 9.5 Momentum Space; 9.6 Evolution in Spin-Momentum Space; 9.7 Liouville Space; 9.8 Compactification; 9.8.1 Compactified pq Space; 9.8.2 Compactification within a Tile; 9.9 Displays; 9.9.1 Momentum-Space Displays; 9.9.2 Position-Space Displays
9.10 Momentum Diffusion

Sommario/riassunto

Covering the most important knowledge on optical pumping of atoms, this ready reference is backed by numerous examples of modelling computation for optical pumped systems. The authors show for the first time that modern scientific computing software makes it practical to analyze the full, multilevel system of optically pumped atoms. To make the discussion less abstract, the authors have illustrated key points with sections of MATLAB codes. To make most effective use of contemporary mathematical software, it is especially useful to analyze optical pumping situations in the Liouville spa