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Energy, fine structure, hyperfine-structure, and Auger width of the core-excited states for the Li isoelectronic sequence[1] BINGCONG GOU, JINGJING ZHU — The relativistic energies, fine structure, hyperfine-structure and Auger widths of the $1s2s^{22}S$, $1s2p^{22}S$, $1s(2s2p\ ^3P^o)^2P^o$, $1s(2s2p\ ^1P^o)^2P^o$, $1s2p^{22}D$, and $1s2s2p\ ^4P^o$ states for the Li isoelectronic sequence (Z=2-20) are studied using the saddle-point variational method and the saddle-point complex-rotation method. Restricted variational method is carried out to extrapolate a better energy. The oscillator strengths and radiative transition rates of these states are reported. The good agreement among the oscillator strengths from the length, velocity, and acceleration results is used as the indication of the accuracy of the wavefunctions. It has been investigated that the properties such as relativistic correction, fine structure splitting, radiative and Auger rate regularly change along the Li isoelectronic sequence. The presence of autoionizing states strongly affects the character of the emission spectrum in these systems. The calculated results are compared with the available experimental and other theoretical data in the literature.

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