Energies, Auger width and branching ratios of some core-excited states for a beryllium-like system[1] BINGCONG GOU, MENG ZHANG — The saddle-point variational method with multiconfiguration interaction wave function is used to obtain the energies of the core-excited triplet $1s2p^3 \quad {}^3P^o$ and ${}^3D^o$ states for the beryllium isoelectronic sequence (Z=4-10), including the mass polarization and relativistic corrections. Restricted variational method is carried out to extrapolate a better energy. The saddle-point complex-rotation method is used to study the Auger width and branching ratios in the Auger decay of the beryllium-like core-excited $1s2p^3 \quad {}^3P^o$ and ${}^3D^o$ states and double core-excited $2s2p^3 \quad {}^1D^o, {}^3S^o, {}^3P^o, {}^3D^o$ and ${}^5S^o$ resonances. The relative branching ratios of the main decay channels of these resonance states are explained satisfactorily using the spin-alignment-dependent theory. The oscillator strengths and transition rates are also calculated. Our results are compared with the available experimental and other theoretical results in the literature.

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