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Optical Properties of $ZnAl_2Se_4$ Crystals

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Absorption, reflection and wavelength modulated reflection spectra were investigated in $ZnAl_2Se_4$ crystals. The energy positions of ground and excited states for three excitonic series (A, B and C) were determined. The main parameters of excitons and more precise values of energy intervals $V_1(\Gamma_7)$ - $C_1(\Gamma_6)$, $V_2(\Gamma_6)$ - $C_1(\Gamma_6)$ и $V_3(\Gamma_7)$ - $C_1(\Gamma_6)$ were estimated. Values of splitting due to crystal field and spin-orbital interaction were calculated. Effective masses of electrons (m^*_{C1}) and holes (m^*_{V1}, m^*_{V2}, m^*_{V3}) were estimated. Reflection spectra contours in excitonic region were calculated using dispersion equations.