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Energy Level Displacement of Excited np State of Kaonic Deuterium In Faddeev Equation Approach

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The energy level displacement of the excited np state
of kaonic deuterium is calculated in terms of the P-wave scattering length
of K^-d scattering. We solve the Faddeev equations for the amplitude of
K^-d scattering in the fixed centre approximation and derive the complex
P-wave scattering length of K^-d scattering in terms of
the S-wave and P-wave scattering lengths of anti-KN
scattering, which are calculated within SU(3) coupled-channel approach and
chiral Lagrangians with derivative meson-baryon couplings invariant under
chiral SU(3)xSU(3) symmetry. For the calculated width
Gamma_(2p) = 10.203 meV of the excited 2p state of kaonic
deuterium we obtain the yield Y_(K^-d) = 0.27% of X-rays for the K_(alpha)
emission line of kaonic deuterium.The obtained results can be used for the planning
of experiments on the measurements of the energy level displacement of the ground state of
kaonic deuterium, caused by strong low-energy interactions.

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