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Analysis of the dynamics of a beam with elliptical cross-section in a solenoid

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The behavior of a beam with elliptical cross-section and arbitrary partial emittances in a solenoid is studied analytically. Such analysis is needed for various tasks of accelerator physics, for example, the formation of the beam extracted from the ion source and for the Low Energy Beam Transport (LEBT) design. The peculiarities of the coupling of the beam oscillations in longitudinal magnetic field are investigated depending on the input beam parameters and the characteristics of the magnetic field, the modified KV-model being used. The results of the calculations are presented which describe the evolution of the beam parameters.

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