

# **MATHEMATICAL DESCRIPTION OF THE ELECTRICAL FIELDS FOR THE BUNCHING BEAMS AT THE RF-ACCELERATORS**

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The simple analytical expressions for the potential and electrical field strength for the accelerating particle bunches with such configurations as: spherical bunches with parabolic density ions distributions and elliptical bunches with homogeneous and parabolic density ions distributions are obtained. The values of these parameters are calculated for the typical bunches of the accelerators. The calculated electrical field strengths for the bunches with parabolic density ions distributions are closed to the real values.