

Gravitational Relief with Spiral Gutters, Formed by the Screw Movement of the Sinusoid

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The differential equations of the particle movement along a rough screw surface formed by the screw motion of a sinusoid under the action of the force of its weight are composed in the article. The sinusoid is located on a vertical plane and is an axial cross-section of the helical surface. The equations are solved by numerical methods and trajectories of a particle movement along a helical surface are constructed. Graphs of changing particle velocity and its distance from the surface axis were also received. The conditions of the stabilization of the particle movement are found. It is shown that in the general case, as a result of acceleration, the particle moves away from the surface axis and stops in one of its gutters. The changing of constant coefficients can control the depths and density of the gutters. In the particular case at zero depth of the gutter, a sinusoid becomes a straight line and the particle moves along the surface of the screw conoid.

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