Investigation of technological processes by

partial differential equations

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Technological processing of materials, current of viscous masses in channels and other problems of technological mechanics geometrically and physically non-linear problems. They, generally, are described by systems of non-linear partial differential equations. Their solution is possible only numerical methods, in particular, by finite differences method. The finite differences method effectively solves stationary and non stationary problems. Investigations show that:

1. The equations become simpler a little if to execute problem definition in strain velocity and the main unknowns to choose velocity vector of flow;

2. In case of the solution of non stationary tasks on each step of time it is necessary to use a firing method for determination of unknown function of time [1];

3. The algorithm of the numerical solution of differential equations considerably depends on boundary conditions. Certain difficulties arise when using the law of friction of Coulomb (Amonton - Coulomb) [2]. Rather easily the equations on condition of adhesion are solved [3].

References

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