

Modelling subdiffusion: from difference equations to fractional differential equations

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Abstract

A discrete model of random walk appears to be a useful tool in modelling subdiffusion or normal diffusion. We base the model of subdiffusion on a random walk model in a system with both discrete time and space variables. The particle's random walk is then described by a set of difference equations which can be solved by means of the generating function method. Using the generating function obtained for these equations we pass from discrete to continuous time and space variables by means of the procedure presented in this contribution. Finally we get the subdiffusion differential equation with fractional time derivative.

References.

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