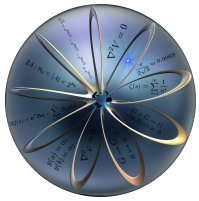

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solenoidal field

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A solenoidal vector field is one that satisfies

$$\nabla \cdot \mathbf{B} = 0$$

at every point where the vector field $\mathbf{B}$ is defined. Here $\nabla \cdot \mathbf{B}$ is the divergence.

This condition actually implies that there exists a vector $\mathbf{A}$, such that

$$\mathbf{B} = \nabla \times \mathbf{A}.$$

For a function f satisfying Laplace's equation

$$\nabla^2 f = 0,$$

it follows that ∇f is solenoidal.