

Momentum equation

@wikipedia

(1)
$$\frac{D\mathbf{u}}{Dt} = \frac{1}{\rho} \nabla \sigma + \mathbf{g}$$

where

$(t, \mathbf{r})$	time and spatial variables
$\mathbf{u}(t, \mathbf{r})$	velocity of Continuum Body
$\rho(t, \mathbf{r})$	density of Continuum Body
$\sigma(t, \mathbf{r})$	stress tensor of Continuum Body
$\mathbf{g}(t, \mathbf{r})$	sum of all body forces exerted on Continuum Body
$\mathbf{f}_{\text{cnt}}(t, \mathbf{r})$	volumetric density of all contact forces exerted on Continuum Body
$\frac{D}{Dt} = \frac{\partial}{\partial t} + \mathbf{u} \nabla$	Material derivative of the Continuum Body motion

In [Fluid Mechanics](#) it's known as [Navier–Stokes equation](#) and based on specific view of the [stress tensor](#).

(2)
$$\sigma = -p - \mu \cdot \left[\Delta \mathbf{u} + \frac{1}{3} \mathbf{u} \nabla \mathbf{u} \right]$$

See also

[Physics](#) / [Mechanics](#) / [Continuum mechanics](#)

[[Continuum Body](#)] [[Navier–Stokes equation](#)]