

NOMENCLATURE

C	material macro-strain tensor
E	macro-strain tensor
f	Body force per unit mass
G	micro-rotation vector
g	micro-rotation component
h	fluid gap
I	micro-inertia density
J	mass moment of inertia
k	Vortex viscosity coefficient
l	Body couples per unit mass
L	Lengh
L	Lengh scale
N	Coupling parameter
r	radius
R	macro-rotation tensor
T	momentum
u	displacement(m)
v	Fluid velocity
X	Position of element
a, b	Functions

Greek symbols

α, β, γ	Spin gradient viscosity coefficient
λ	second order viscosity coefficient
μ	dynamic viscosity coefficient
ρ	Density, kg.m^{-3}
ϕ	micro-rotation tensor
Ξ	micro-strain sensor
Γ	material micro-strain sensor
Ψ	material micro-strain sensor
σ	Stress tensor
m	Couple stress tensor
δ	the Kronecker delta
ε	Levi-Civita symbol
θ	Angular displacement, Rad
$\mathcal{G}, \varphi, \phi, \psi$	functions
τ	shear stress

Subscripts

c	cylinder
f	fluid
s	shaft