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## LIST OF SYMBOLS AND ABBREVIATIONS

$\delta\chi/h$	-	Angle of twist per unit length of the strand
$F_a$	-	Axial force of the strand
$\varepsilon_{w(\text{axial})}$	-	Axial strain of Helical wire during axial loading
$\varepsilon$	-	Axial strain of the strand
$\varepsilon_{w(\text{purebending})}$	-	Axial strain of wire during axial pure bending
$M_b$	-	bending moment of the strand
$\delta\alpha, \delta\chi$	-	Change in helix angle and change in swept angle
$\delta r, \delta l$	-	Change in helix radius and change in length
$\Delta\kappa, \Delta\kappa', \Delta\tau$	-	Change-in helical wire curvatures twist in the normal, bi-normal and axial directions
$1/\rho$	-	Curvature of the strand
$S$	-	Distributed forces from the centre of the core
$X, Y, Z$	-	Distributed forces of the helical wire in the normal, bi-normal and axial directions
$K, K', \Theta$	-	Distributed forces of the helical wire in the normal, bi-normal and axial directions
$h, h_0$	-	Final and initial height of the wire for one pitch
$\alpha, \alpha_0$	-	Final and initial helix angle
$r, r_0$	-	Final and initial helix radius
$l, l_0$	-	Final and initial length of the wire for one pitch
$\chi, \chi_0$	-	Final and initial swept angle of helical wire

$N, N, T$	-	Forces of the helical wire in the normal, bi-normal and axial directions
$\mu$	-	Friction between the drum and strand
$\kappa_0, \kappa'_0, \tau_0$	-	Helical wire curvatures and twist in the normal, bi-normal and axial directions before bending
$\kappa_1, \kappa'_1, \tau_1$	-	Helical wire curvatures and twist in the normal, bi-normal and axial directions after bending
$I, I_c$	-	Moment of inertia of wire and core
$G, G', H$	-	Moments of the helical wire in the normal, bi-normal and axial directions
$m$	-	Number of wires in the layer
$J, J_c$	-	Polar moment of inertia of wire and core
$\phi$	-	Position angle of helical wires in a strand
$C, C_c$	-	Shear modulus of wire and core
$M_t$	-	Twisting moment of the strand due to axial force
$E, E_c$	-	Young's modulus of wire and core