

## NOTATIONS

$P, Q$	Unstarred operators
$P^*, Q^*$	Starred operators
$G$	Rough boundary operator
$I$	Unit matrix
$T, T^{-1}$	Smooth boundary operator
$CL$	Linear coulomb operator
$S$	Shift operator
$R$	Reversion operator
$U, V, W, X, Y, Z$	Matrix operators
$\sigma_1, \sigma_2, \sigma_3, \sigma'_1, \sigma'_2, \sigma'_3$	Column vectors representing slipline curves
$\bar{c}$	Column vector representing a circle of unit radius of curvature
$\rho$	Scale parameter representing the geometrical scale of the field
$\omega$	Angular velocity of chip curl
$p$	Hydrostatic pressure
$\eta, \theta, \eta_1, \psi, \delta$	Slipline field angles
$\xi, \phi$	The angles at which sliplines meet the tool face
$X, Y$	Cartesian coordinates
$\bar{X}, \bar{Y}$	Moving coordinates

$F_x, F_y$	Traction components along cartesian coordinate Directions
$F_{\bar{x}}, F_{\bar{y}}$	Traction components along moving coordinate directions
$\alpha_1, \alpha_2$	Angles made by the primary shear line with free surfaces
$t_0$	Undeformed chip-thickness
$t_1$	Chip-thickness
$t_1 / t_0$	Cutting ratio
$l_t$	Natural contact length between chip and tool
$l_p$	Plastic contact length between chip and tool
$l_s$	Sticking contact length between chip and tool
$l_e$	Elastic contact length between chip and tool
$\gamma_0$	Orthogonal rake angle
$\phi_p$	Principal cutting edge angle
$s$	Feed
$d$	Width of cut
$F_C$	Cutting force
$F_T$	Thrust force
$R_0$	Outer radius of curvature of chip
$R_i$	Inner radius of curvature of chip

$R_m$	Mean radius of curvature of chip
$R_{chip}$	Outer radius of chip formed by chip-breaker
$h$	Height of chip-breaker
$W$	Distance of the chip breaker from the cutting edge
$F_b$	Force exerted by chip-breaker on chip
$B_0$	Linear coefficient
$\mu$	Coefficient of friction
$m$	Constant friction factor
$m_1$	Strain hardening factor
$n$	Exponent of stress distribution in the elastic zone
$H_E, V_E$	Horizontal and vertical forces in the elastic zone at the chip/tool interface
$H_P, V_P$	Horizontal and Vertical forces acting across the chip boundary
$M_P$	Moment acting across the chip-boundary
$M_E$	Moment acting in the elastic zone
$F_N, F_T$	Normal and frictional force at the chip/tool interface in the elastic zone
$\sigma_n, \tau$	Normal and shear stress at the chip/tool interface
$k$	Yield stress in shear