Modelli numerici elasto-plastici

Hardening isotropo e cinematico

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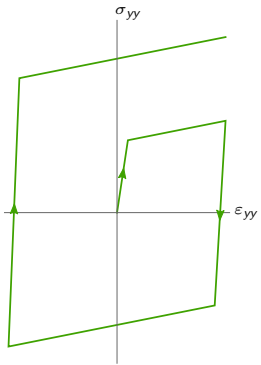
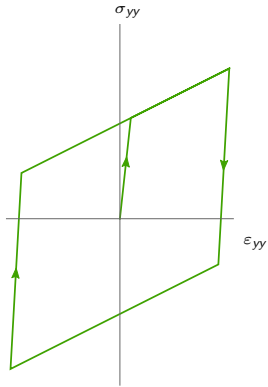
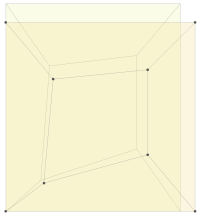
Structural behaviour

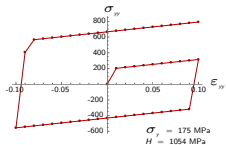


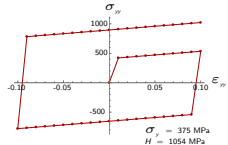


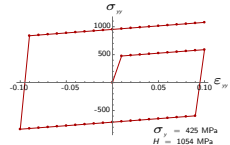
σ_y (MPa)	σ_u (MPa)	ε_u (%)
175	500	45
190	600	45
280	680	35
450	700	25
345	517	25
276	517	30
414	274	20
276	759	60

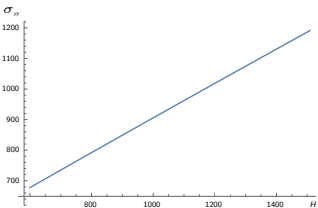
Patch test

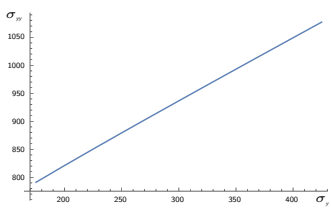


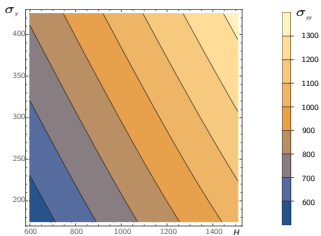

σ_{yy}
800
600
400
200
-0.10
-0.05
0.05
0.10
ε_{yy}
-200
-400
-600
σ_y = 175 MPa
H = 1054 MPa


σ_{yy}
1000
500
-0.10
-0.05
0.05
0.10
ε_{yy}
-500
σ_y = 375 MPa
H = 1054 MPa

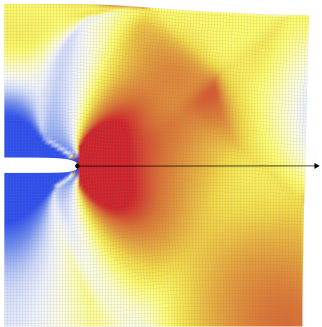

σ_{yy}
1000
500
-0.10
-0.05
0.05
0.10
ε_{yy}
-500
σ_y = 425 MPa
H = 1054 MPa

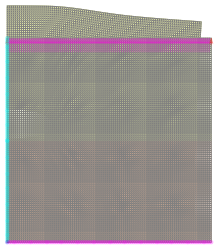

σ_{yy}
1200
1100
1000
900
800
700
800
1000
1200
1400
H


σ_{yy}
1050
1000
950
900
850
800
200
250
300
350
400
σ_y

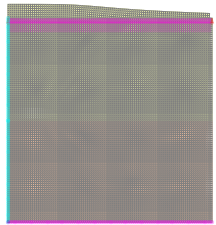

σ_y
400
350
300
250
200
600
800
1000
1200
1400
H
σ_{yy}
1300
1200
1100
1000
900
800
700
600

Crack plate

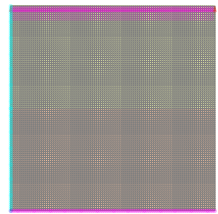




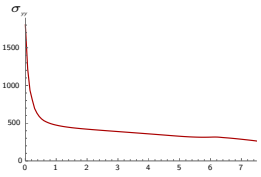
$\sigma_y = 175$ MPa
$H = 1145$ MPa

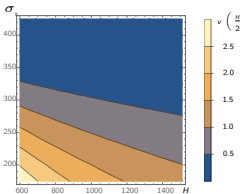


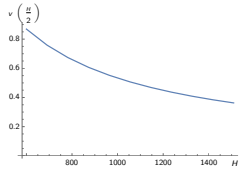
$\sigma_y = 250$ MPa
$H = 1509$ MPa

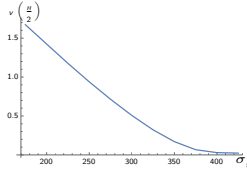


$\sigma_y = 425$ MPa
$H = 1054$ MPa

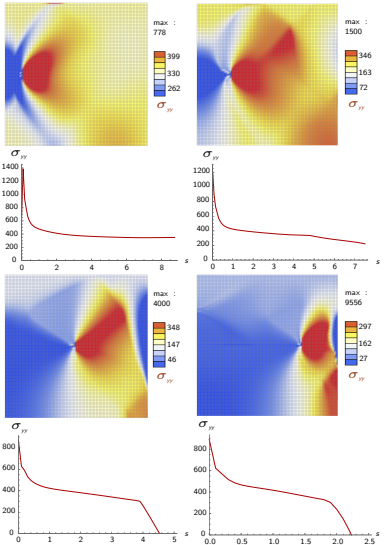


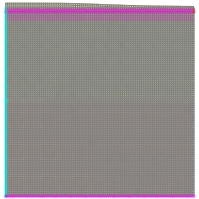


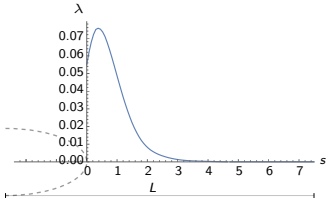




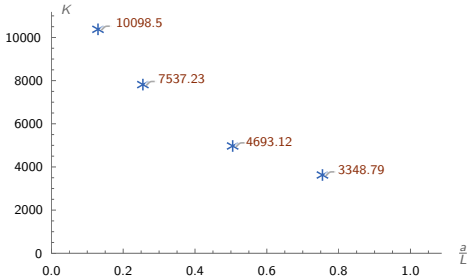
Stress intensity factor







$$K = \sqrt{\frac{\pi r_p (\sigma_y)^2}{(1-2\nu)}}$$



Isotropic and kinematic hardening