A.1 Shear Material Input

```
uniaxialMaterial  Shear01  $ShearTag  $Ep  $ecrp  $E2p  $eypp  $eyep
$ealfp $En $ecrn E2n $eypn $eyen $ealfn
```

$ShearTag	unique material tag for shear spring
$Ep $En	uncracked shear stiffness of the reinforced concrete column on the positive and negative loading side, respectively (Figure 1).
$ecrp $ecrn	shear cracking displacement of the RC column on the positive and negative loading side, respectively.
$E2p $E2n	cracked shear stiffness of the RC column on the positive and negative loading side, respectively (Figure 1).
$eypp $eypn	shear displacement corresponding to the peak strength on the positive and negative loading side, respectively.
$eyep $eyen	shear displacement on the onset of lateral strength degradation on the positive and negative loading side, respectively.
$ealfp $ealfn	lateral displacement corresponding to axial failure on the positive and negative loading side, respectively.

A.2 Axial Material Input

```
uniaxialMaterial Axial01 $AxialTag $nodej $nodei $Kax $d_u $d_alf
```

$AxialTag	unique material tag for axial spring
$nodej	top node of shear spring
$nodei	bottom node of shear spring
$Kax	axial stiffness of the RC column.
$d_u	shear displacement at the onset of lateral strength degradation ($\Delta_{sh,u}$ in Figure 1), same with $eyep.
$d_alf	lateral displacement corresponding to axial failure ($\Delta_{alf,u}$ in Figure 1), same with $ealfp.

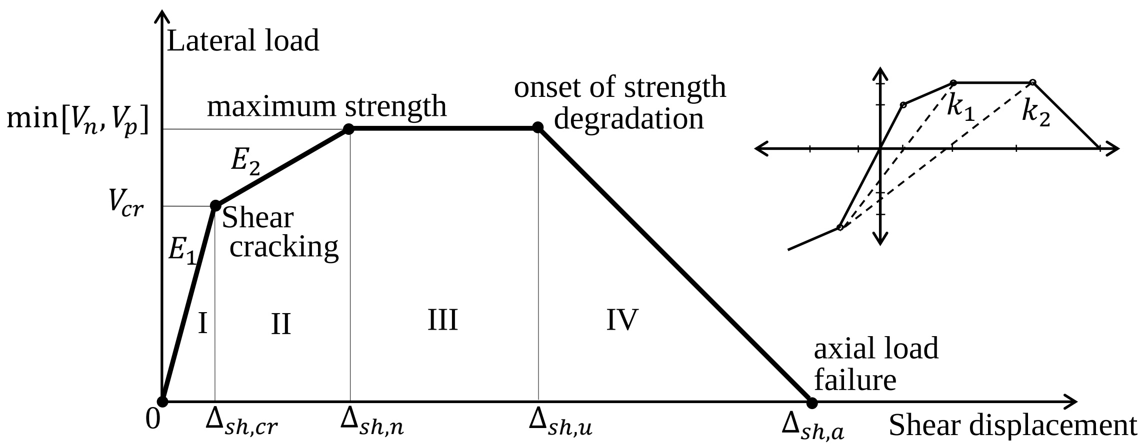

Figure 1: Lateral force-shear displacement envelope used in the proposed model.

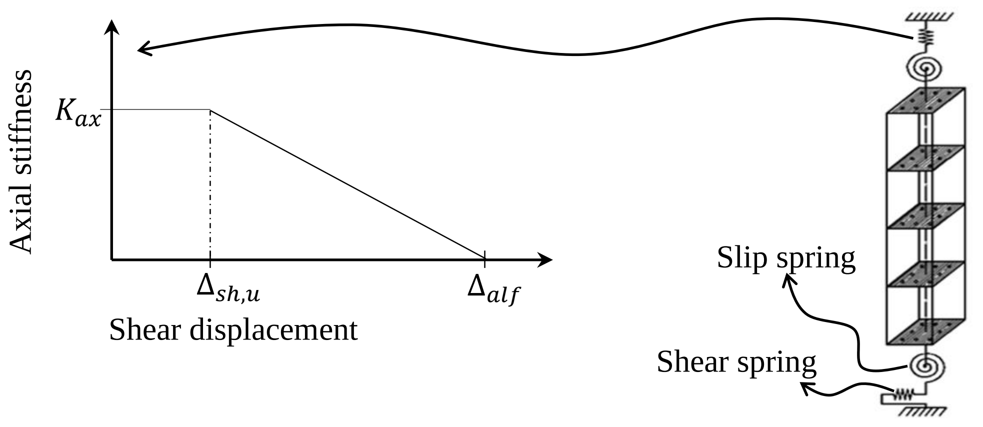

Figure 2: Representation of the proposed axial displacement model of a reinforced concrete column as a function of shear displacement.

References

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