**Two-Dimensional Generalized Forces**

**Moment about origin**





 **OK**

 **NO!**



 component of  perpendicular to  multiplied by 





{si}P

{Fon i}P

Pi

yi'

{ri}

xi'

{ri}P

Oi

i

**Generalized force on body i about origin**





**Pure force**



**Pure moment**



**Translational spring-damper-actuator**

 Note similarity to double revolute constraint

Pj

yj'

xj'

Oj

Pi

yi'

Oi

xi'





























**Rotational spring-damper-actuator**

 Note similarity to relative angle constraint



yj'

xj'

Oj

fj

yi'

xi'

Oi

fi













