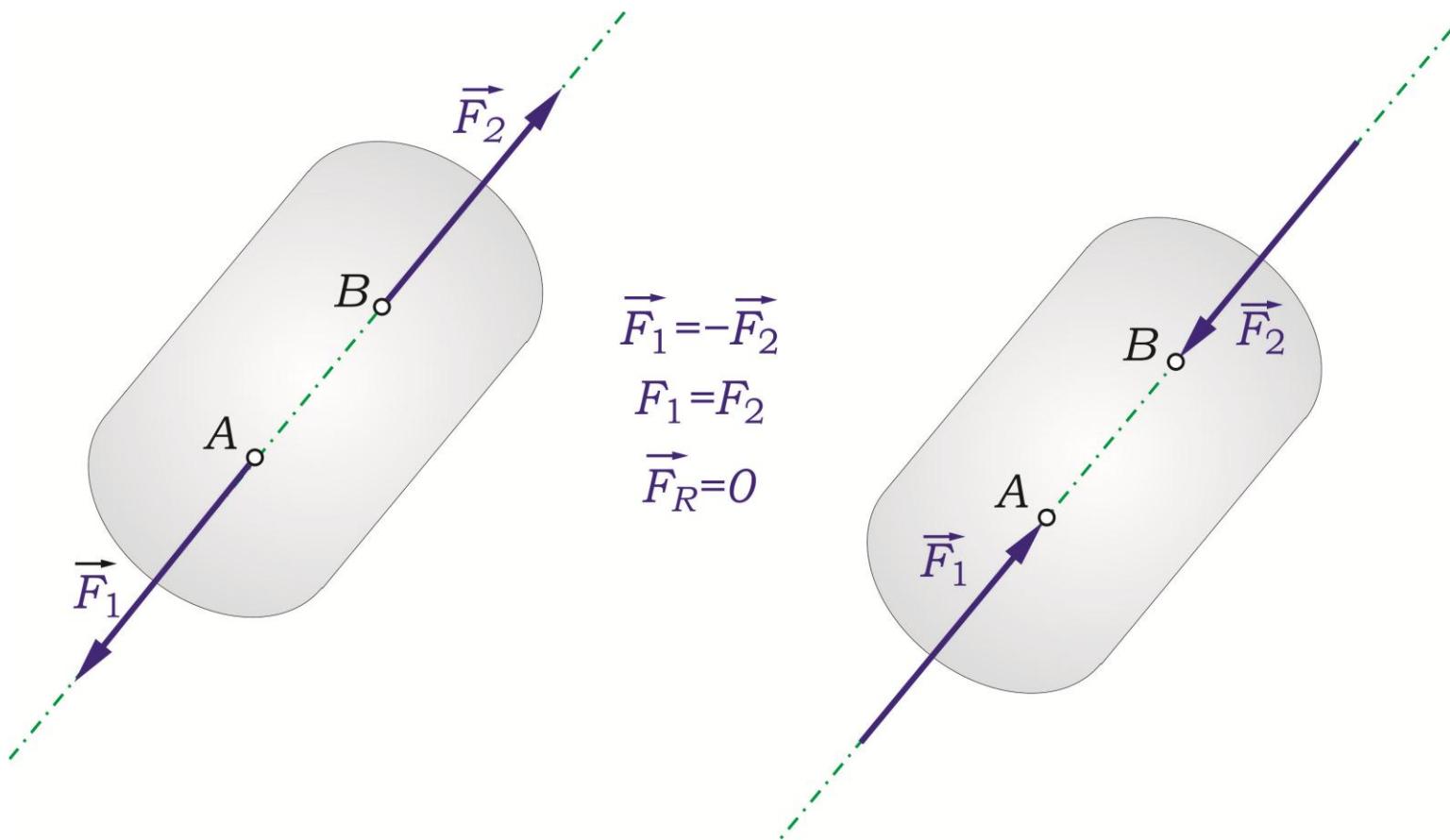


# AKSIOMI STATIKE

# PRVI AKSIOM

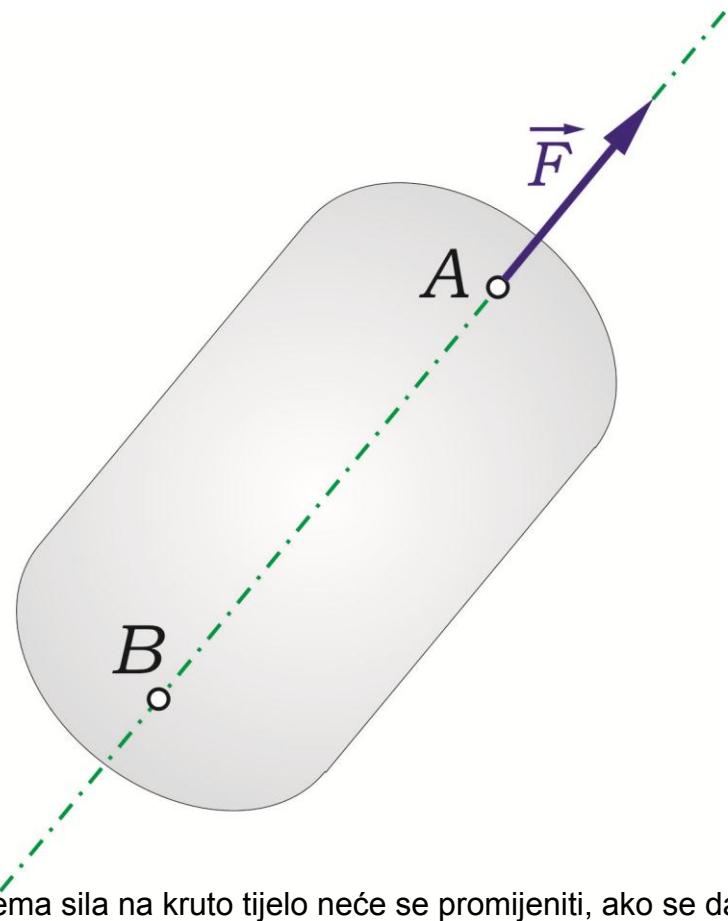
# PRVI AKSIOM



**Prvi aksiom:** Slobodno kruto tijelo na koje djeluje dvije sile,  $\vec{F}_1$  i  $\vec{F}_2$ , biće u ravnoteži pod dejstvom tih sila samo ako djeluju duž iste napadne linije (nalaze se na istom pravcu), imaju isti intenzitet ( $F_1 = F_2$ ), a suprotnog su smjera, slika 2.2.

## DRUGI AKSIOM – Pravilo o pomicanju hvatišta sile

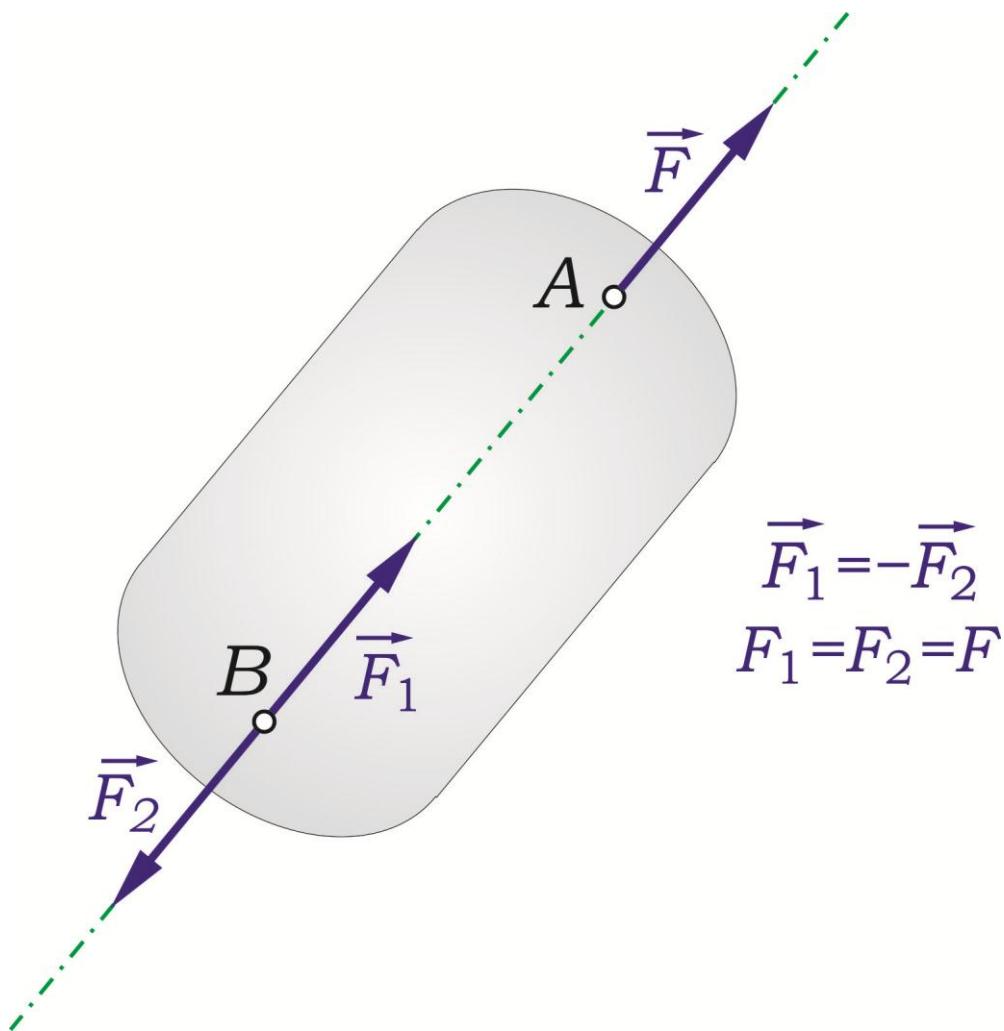
## DRUGI AKSIOM – Pravilo o pomicanju hvatišta sile



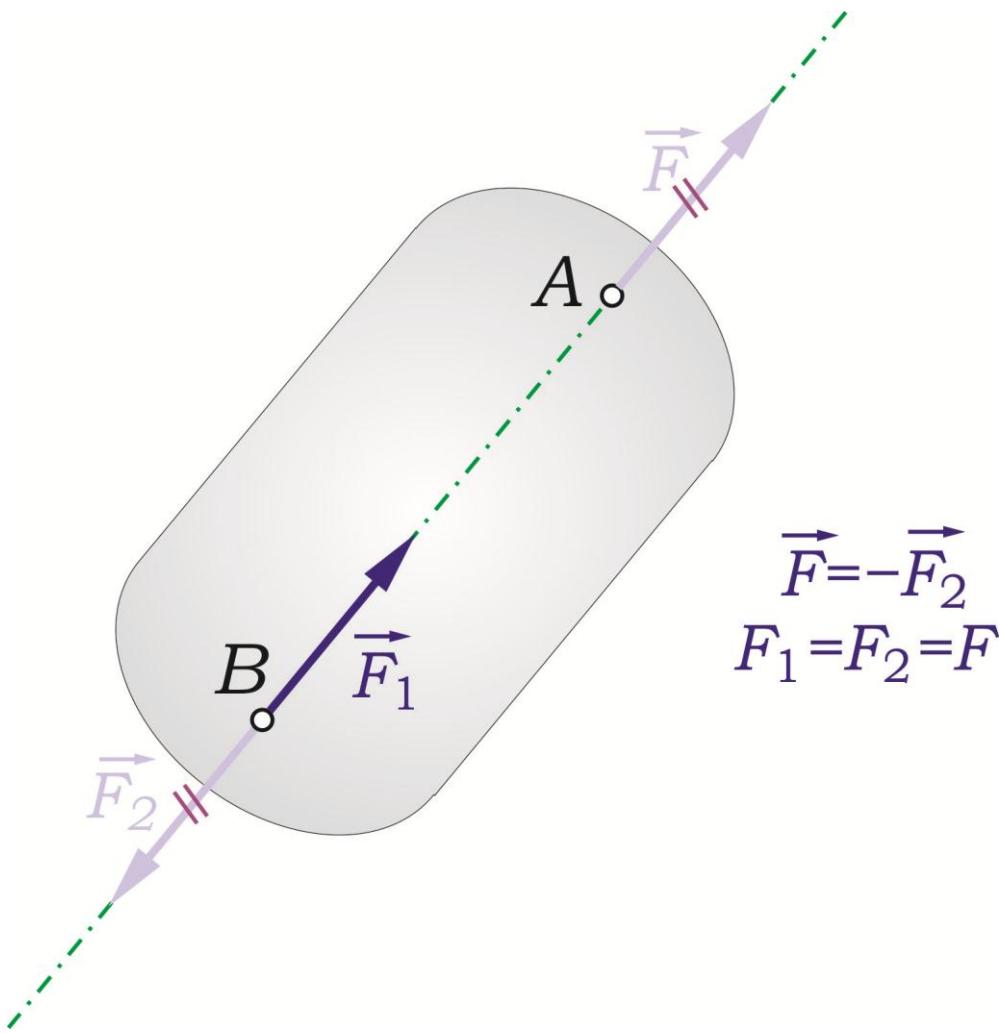
Drugi aksiom: Dejstvo datog sistema sila na kruto tijelo neće se promijeniti, ako se datom sistemu doda ili oduzme uravnoteženi sistem sila.

Kao posljedica prvog i drugog aksioma proizlazi konstatacija da silu koja djeluje na kruto tijelo možemo pomjerati duž napadne linije, a da se pri tom njezino dejstvo na tijelo ne promjeni.

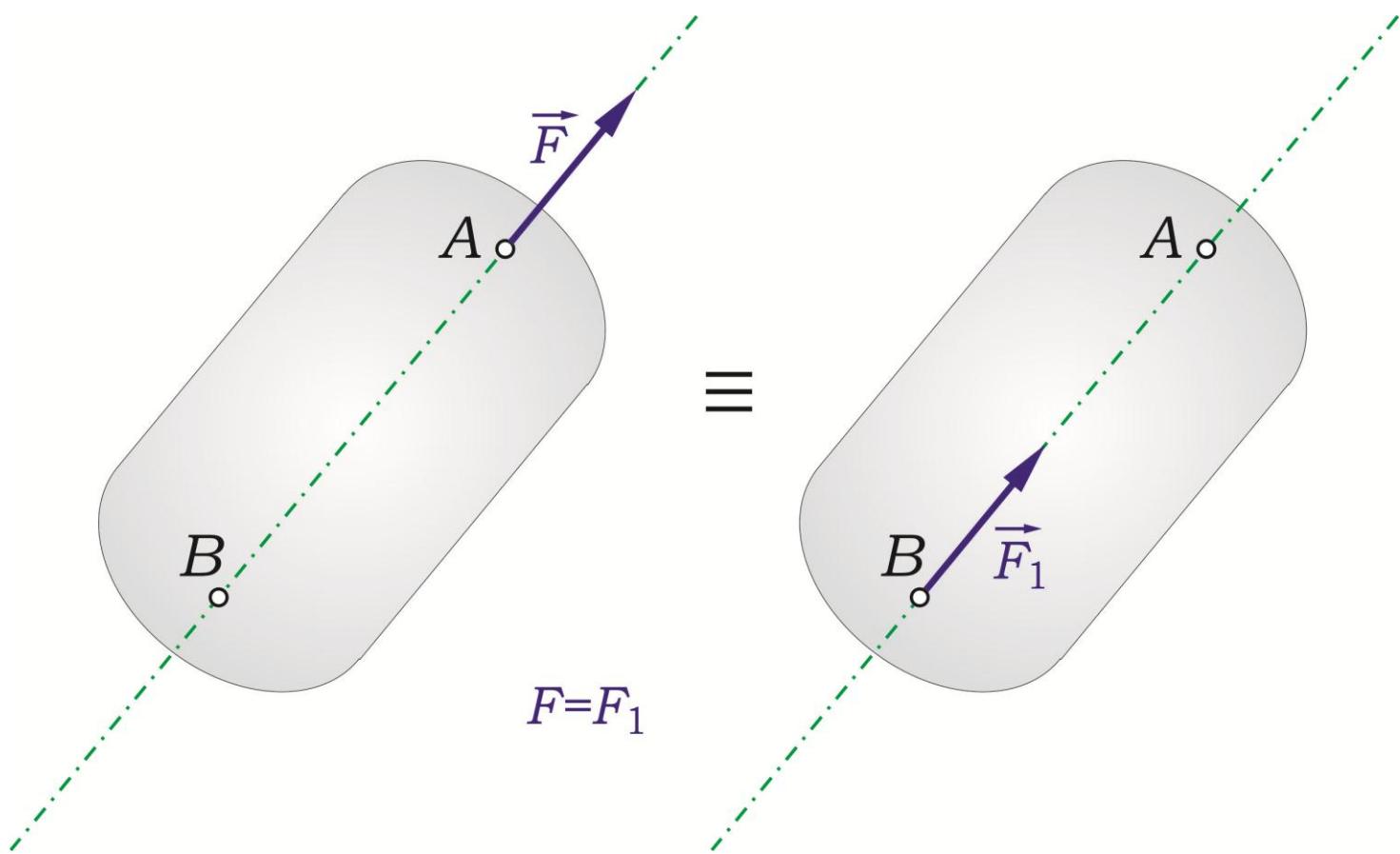
## DRUGI AKSIOM – Pravilo o pomicanju hvatišta sile



## DRUGI AKSIOM – Pravilo o pomicanju hvatišta sile



## DRUGI AKSIOM – Pravilo o pomicanju hrvatišta sile



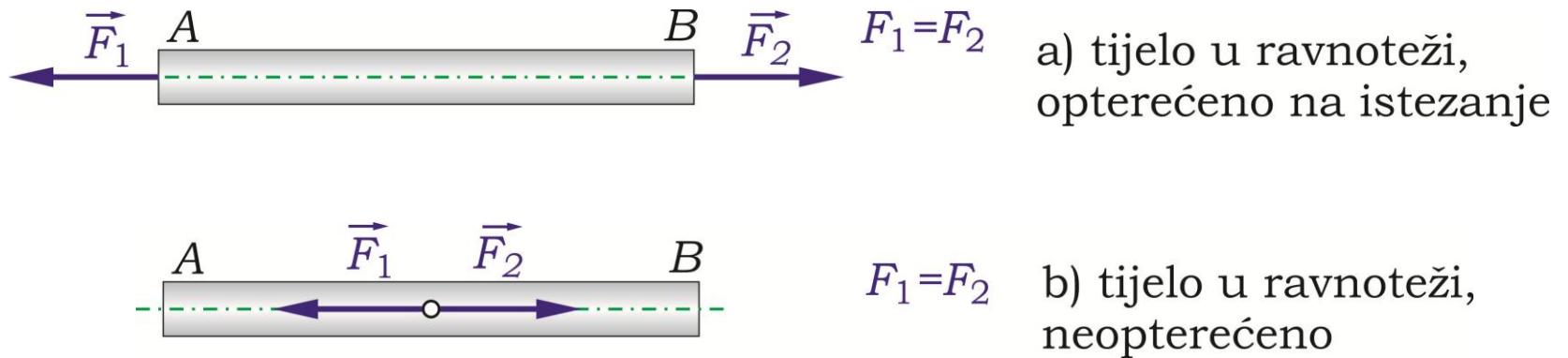
# Deformabilno tijelo

## Deformabilno tijelo

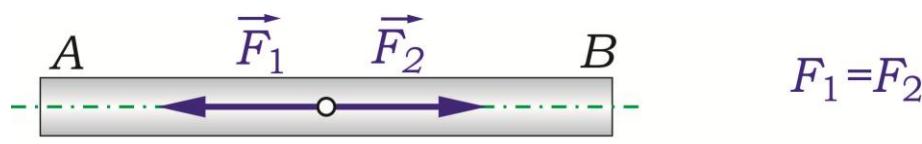
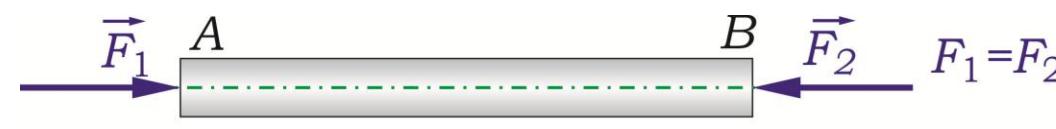


a) tijelo u ravnoteži,  
opterećeno na istezanje

## Deformabilno tijelo

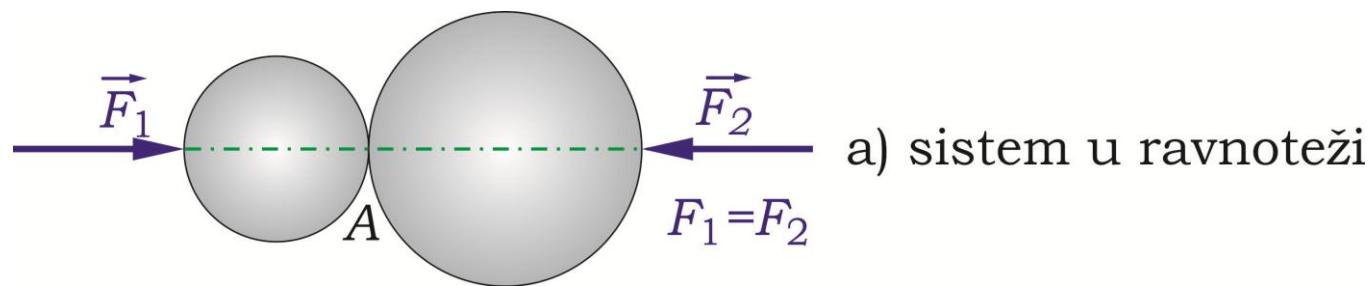


## Deformabilno tijelo

- a) tijelo u ravnoteži,  
opterećeno na istezanje
- b) tijelo u ravnoteži,  
neopterećeno
- c) tijelo u ravnoteži,  
opterećeno na pritisak
- 
- The diagram shows a horizontal rectangular bar representing a deformable body. At the left end, a force vector  $\vec{F}_1$  points to the left. At the right end, a force vector  $\vec{F}_2$  points to the right. The center of the bar is marked with point  $B$ . A dashed green line extends from point  $A$  on the left to point  $B$  on the right, representing the original undeformed state of the bar. The condition  $F_1 = F_2$  is indicated.
- 
- The diagram shows a horizontal rectangular bar representing a deformable body. At the left end, a force vector  $\vec{F}_1$  points to the left. At the right end, a force vector  $\vec{F}_2$  points to the right. The center of the bar is marked with a central point  $O$ , indicating the center of the body. A dashed green line extends from point  $A$  on the left to point  $B$  on the right, representing the original undeformed state of the bar. The condition  $F_1 = F_2$  is indicated.
- 
- The diagram shows a horizontal rectangular bar representing a deformable body. At the left end, a force vector  $\vec{F}_1$  points to the right. At the right end, a force vector  $\vec{F}_2$  points to the left. The center of the bar is marked with point  $B$ . A dashed green line extends from point  $A$  on the left to point  $B$  on the right, representing the original undeformed state of the bar. The condition  $F_1 = F_2$  is indicated.

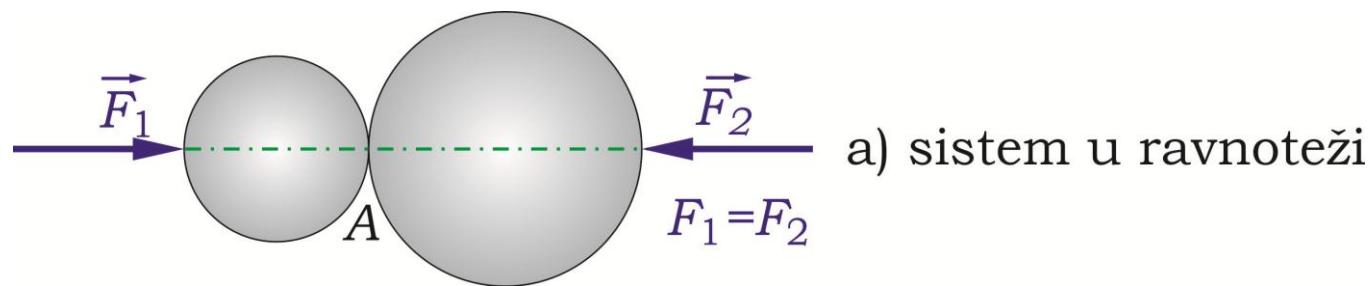
# Sistem tijela

## Sistem tijela

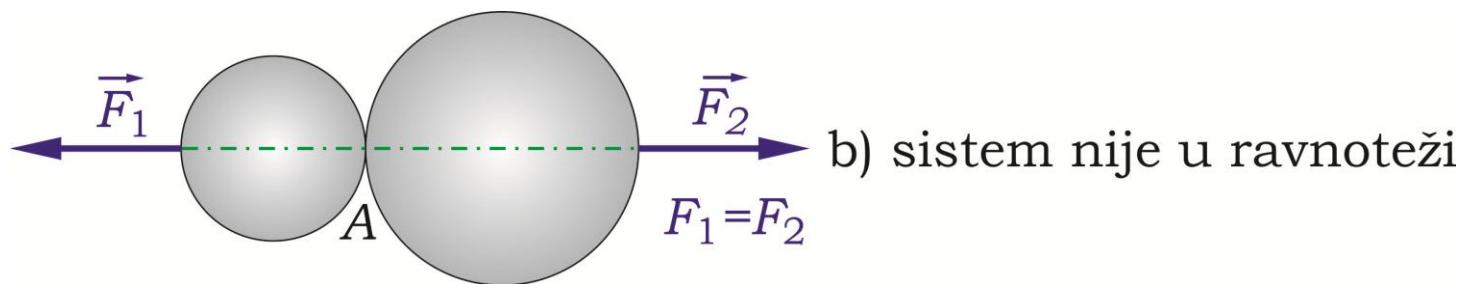


a) sistem u ravnoteži

## Sistem tijela



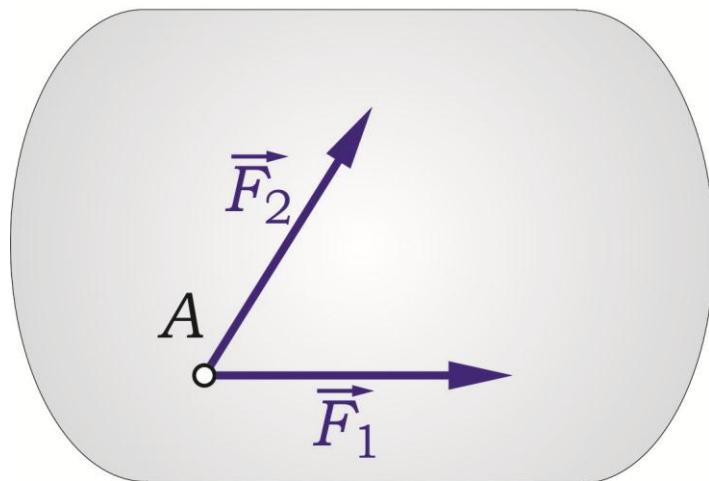
a) sistem u ravnoteži



b) sistem nije u ravnoteži

# TREĆI AKSIOM

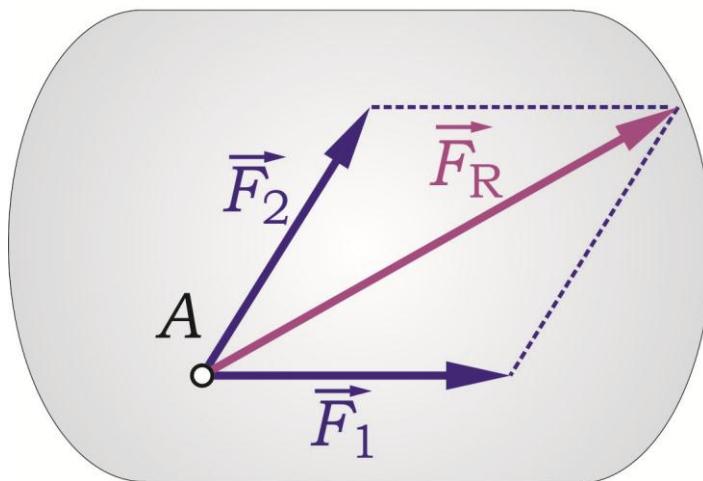
## TREĆI AKSIOM



Treći aksiom: Rezultanta dvije sile koje djeluju na tijelo u jednoj tački, određena je dijagonalom paralelograma, konstruisanog nad silama kao njegovim stranicama.

## TREĆI AKSIOM

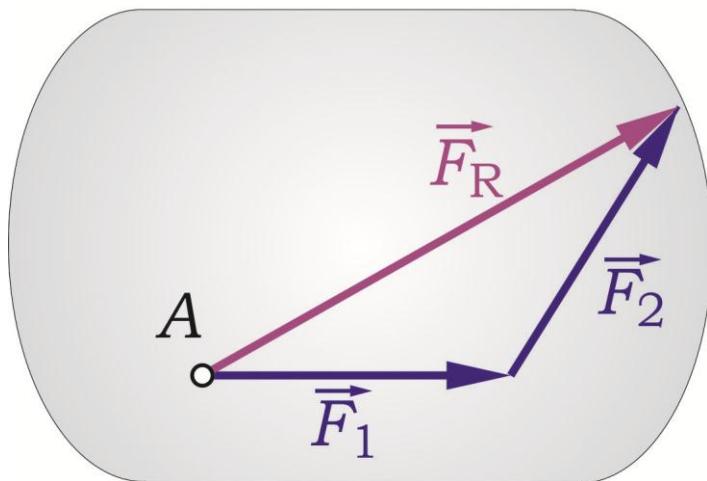
paralelogram sila



$$\vec{F}_R = \vec{F}_1 + \vec{F}_2$$

## TREĆI AKSIOM

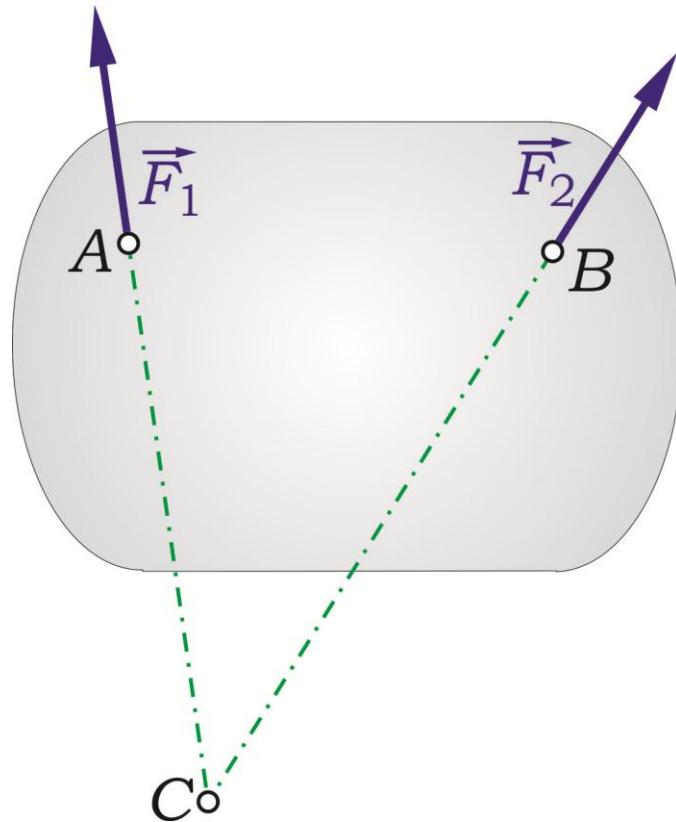
trougao sila



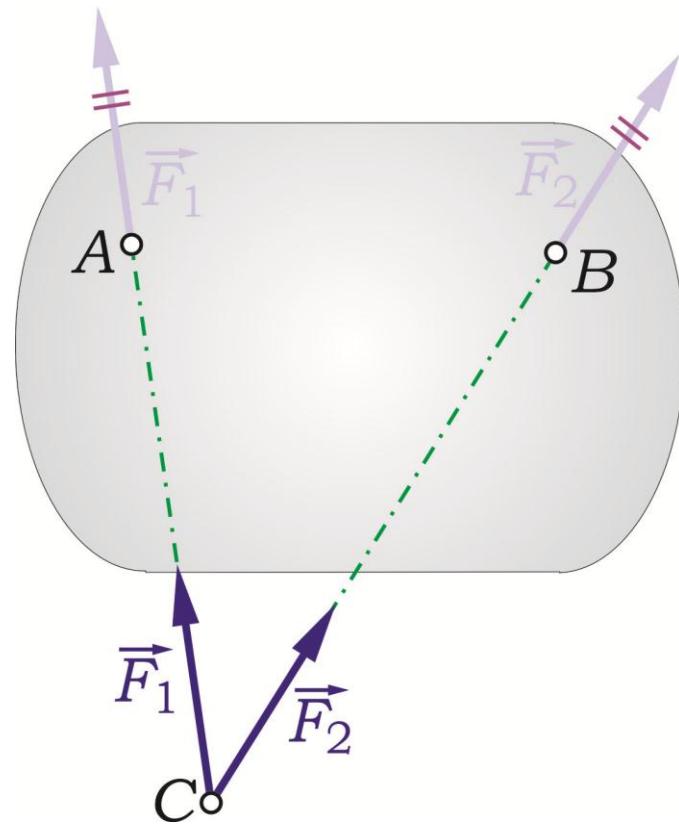
$$\vec{F}_R = \vec{F}_1 + \vec{F}_2$$

# Rezultanta sučeljnih sila

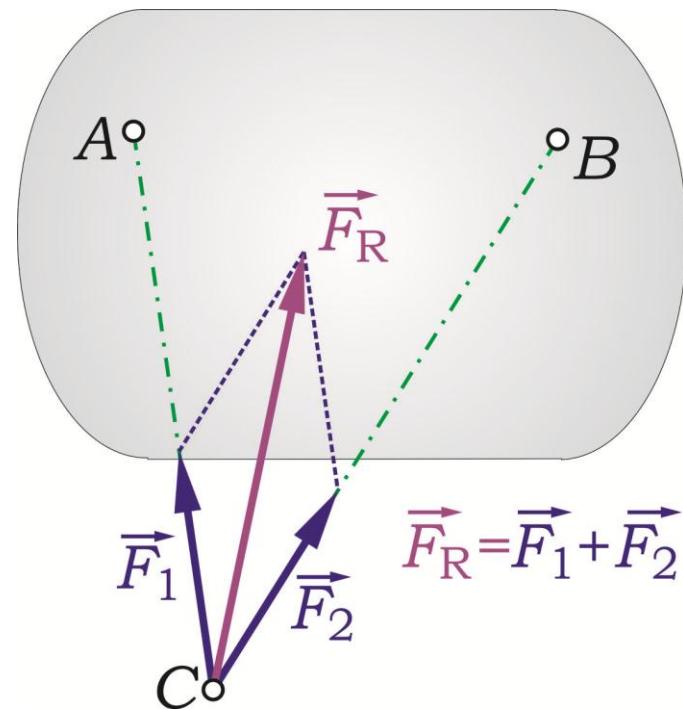
## Rezultanta sučeljnih sila



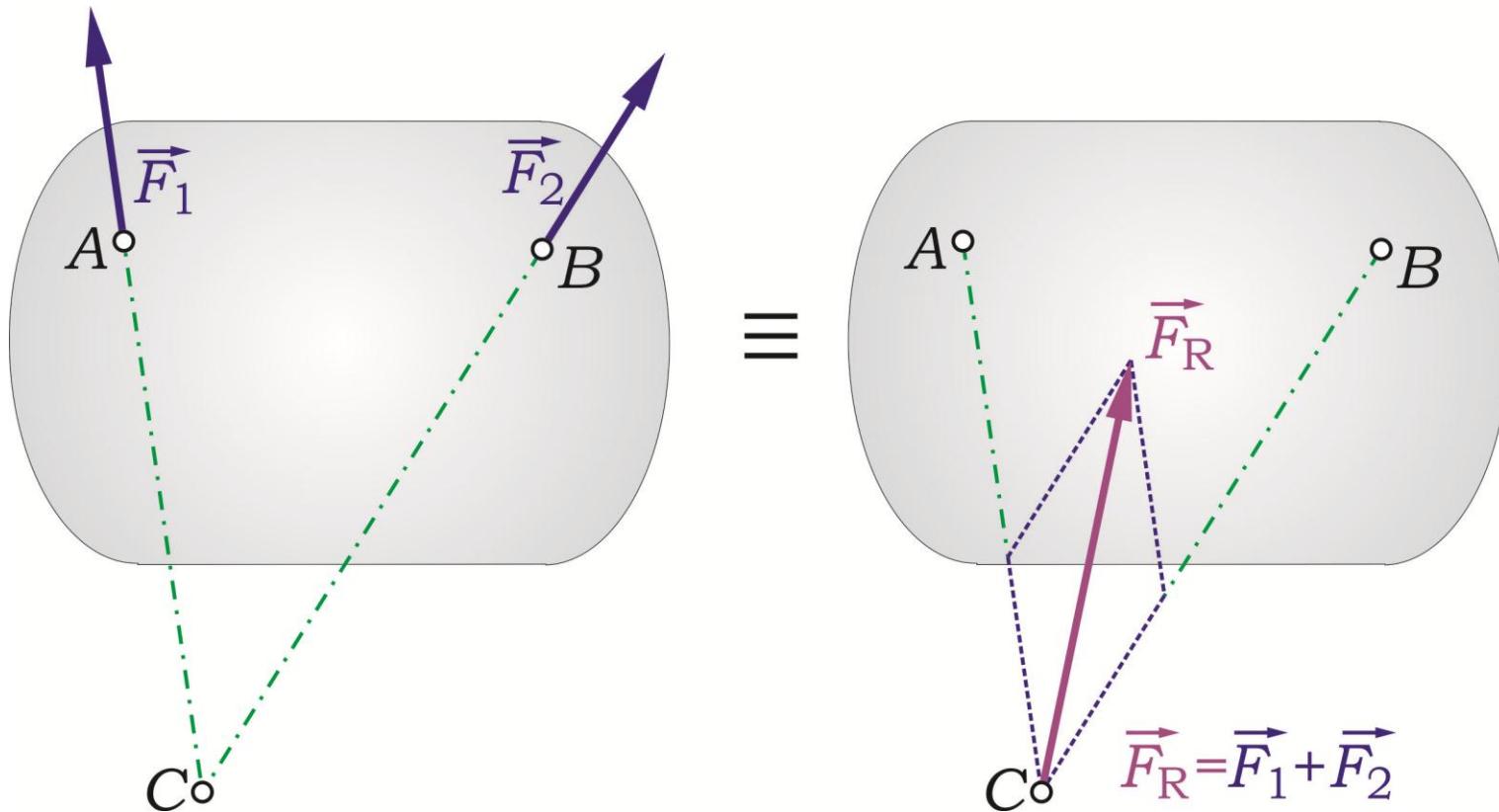
## Rezultanta sučeljnih sila



## Rezultanta sučeljnih sila

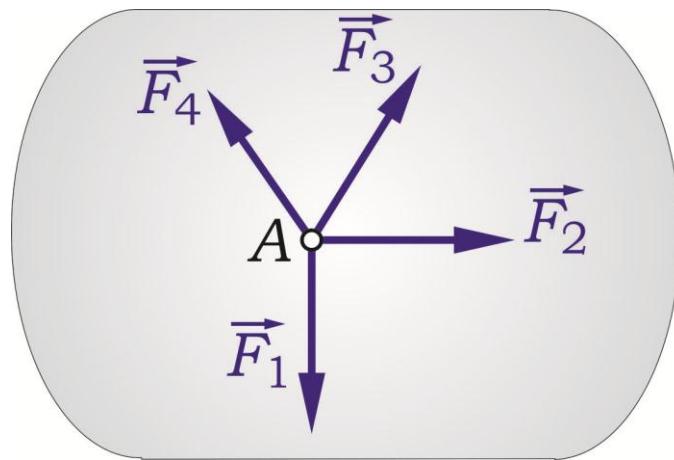


## Rezultanta sučeljnih sila



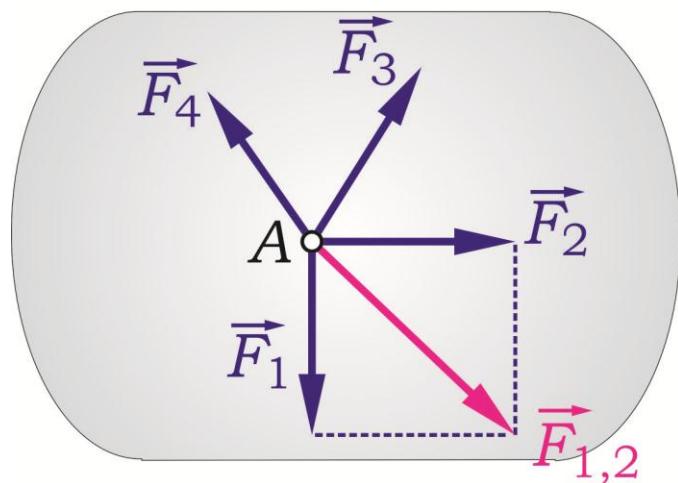
# Rezultanta sistema sučeljnih sila

## Rezultanta sistema sučeljnih sila



# Rezultanta sistema sučeljnih sila

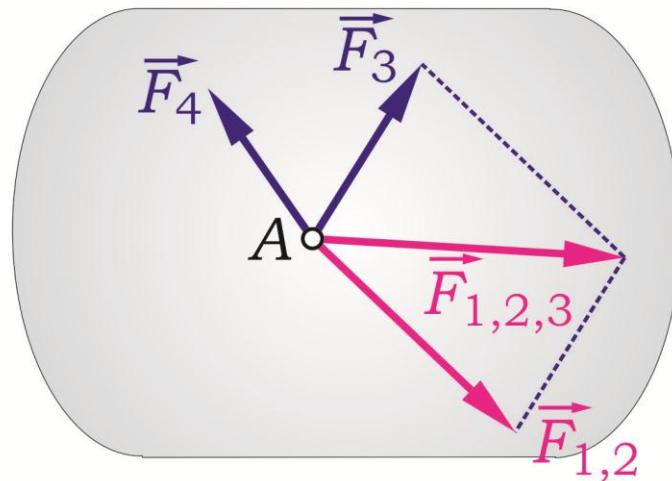
paralelogram sila



$$\vec{F}_{1,2} = \vec{F}_1 + \vec{F}_2$$

# Rezultanta sistema sučeljnih sila

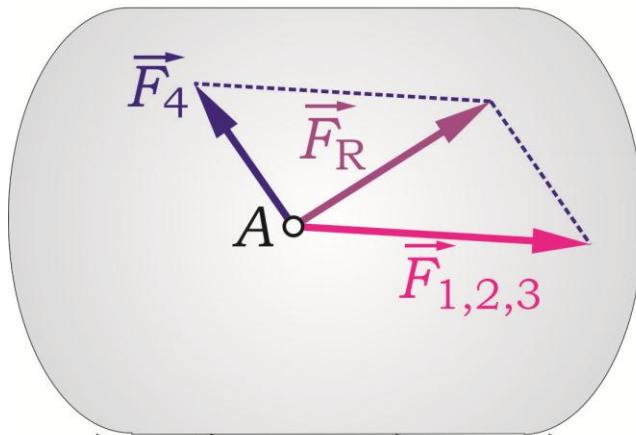
paralelogram sila



$$\vec{F}_{1,2,3} = \vec{F}_{1,2} + \vec{F}_3 = \vec{F}_1 + \vec{F}_2 + \vec{F}_3$$

# Rezultanta sistema sučeljnih sila

## paralelogram sila



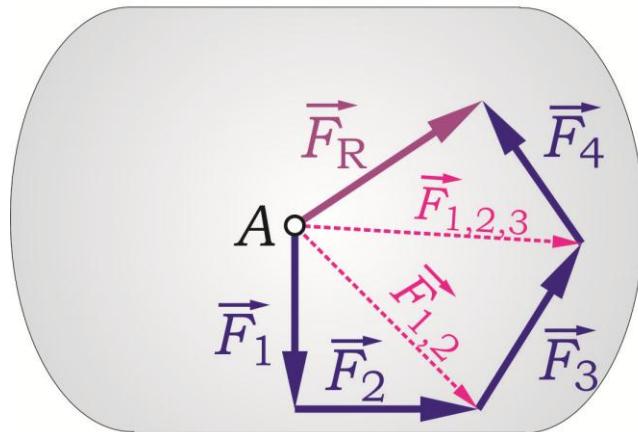
$$\vec{F}_R = \vec{F}_{1,2,3,4} = \vec{F}_{1,2,3} + \vec{F}_4$$

$$\vec{F}_R = \vec{F}_1 + \vec{F}_2 + \vec{F}_3 + \vec{F}_4$$

$$\vec{F}_R = \sum \vec{F}_i$$

# Rezultanta sistema sučeljnih sila

poligon sila

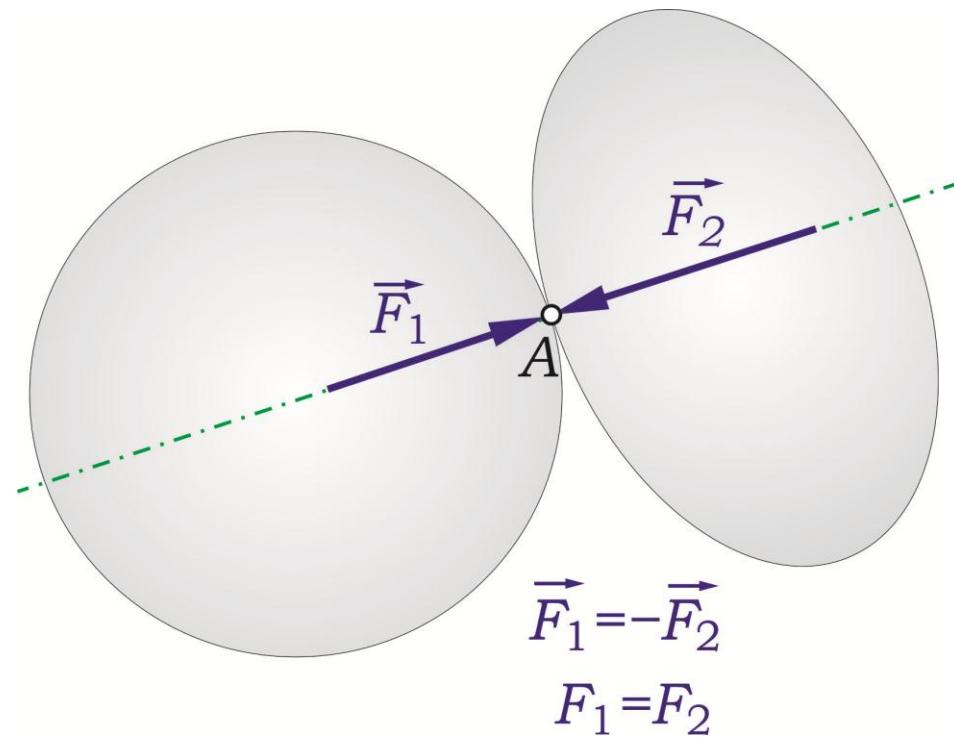


$$\vec{F}_R = \vec{F}_1 + \vec{F}_2 + \vec{F}_3 + \vec{F}_4$$

$$\vec{F}_R = \sum \vec{F}_i$$

## ČETVRTI AKSIOM– Zakon akcije i reakcije

## ČETVRTI AKSIOM– Zakon akcije i reakcije



Sile sa kojim dva tijela djeluju jedno na drugo jednake su po intenzitetu i pravcu, a usmjerenе su suprotnо.

## PETI AKSIOM – Princip ukrućenja

Ako se deformabilno tijelo nalazi u ravnoteži, ravnotežno stanje će se zadržati, ako to tijelo postane kruto (princip solidifikacije).

Sva prirodna čvrsta tijela, kada miruju, možemo pri proučavanju ravnoteže sila koje na njih djeluju smatrati krutim tijelima.