

HSLU Hochschule Luzern

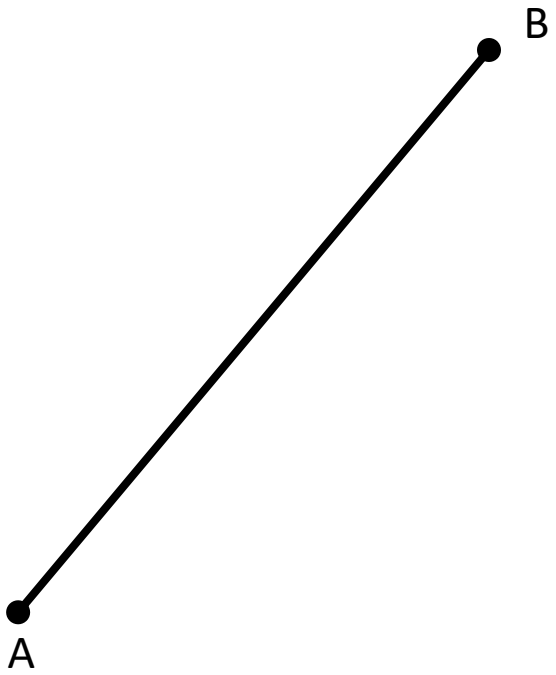
Herbstsemester 2024

Baustatik 1

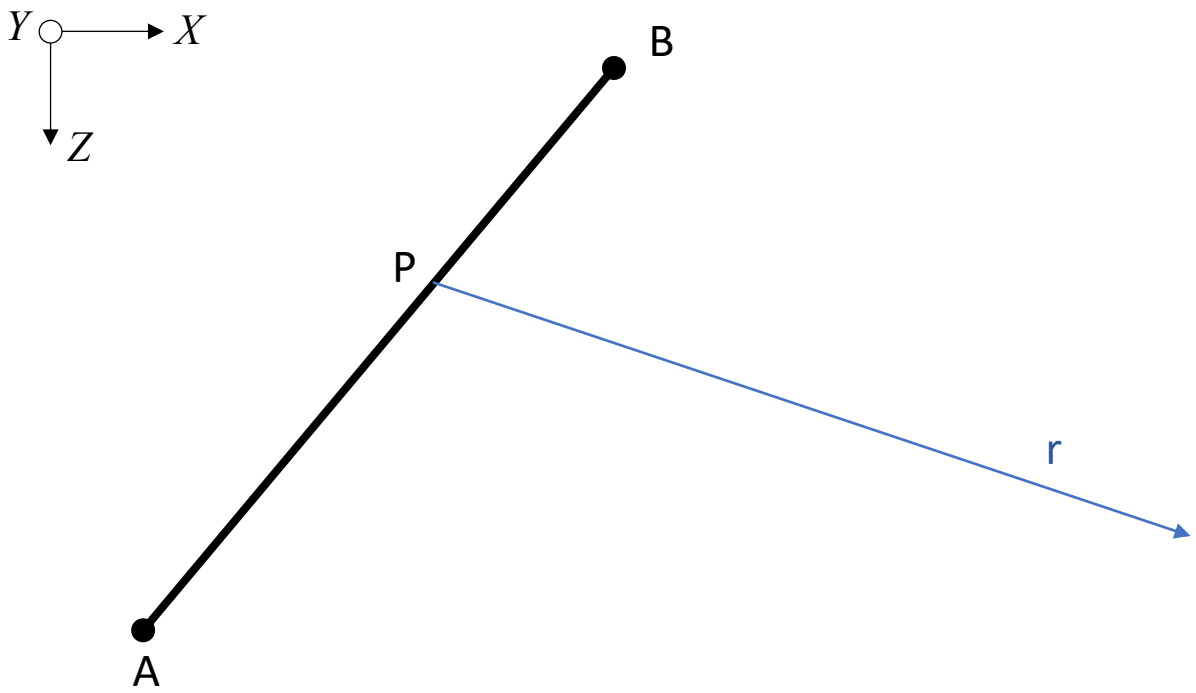
Kinematik der Einzelstabs

Dr. Stephan Gollob

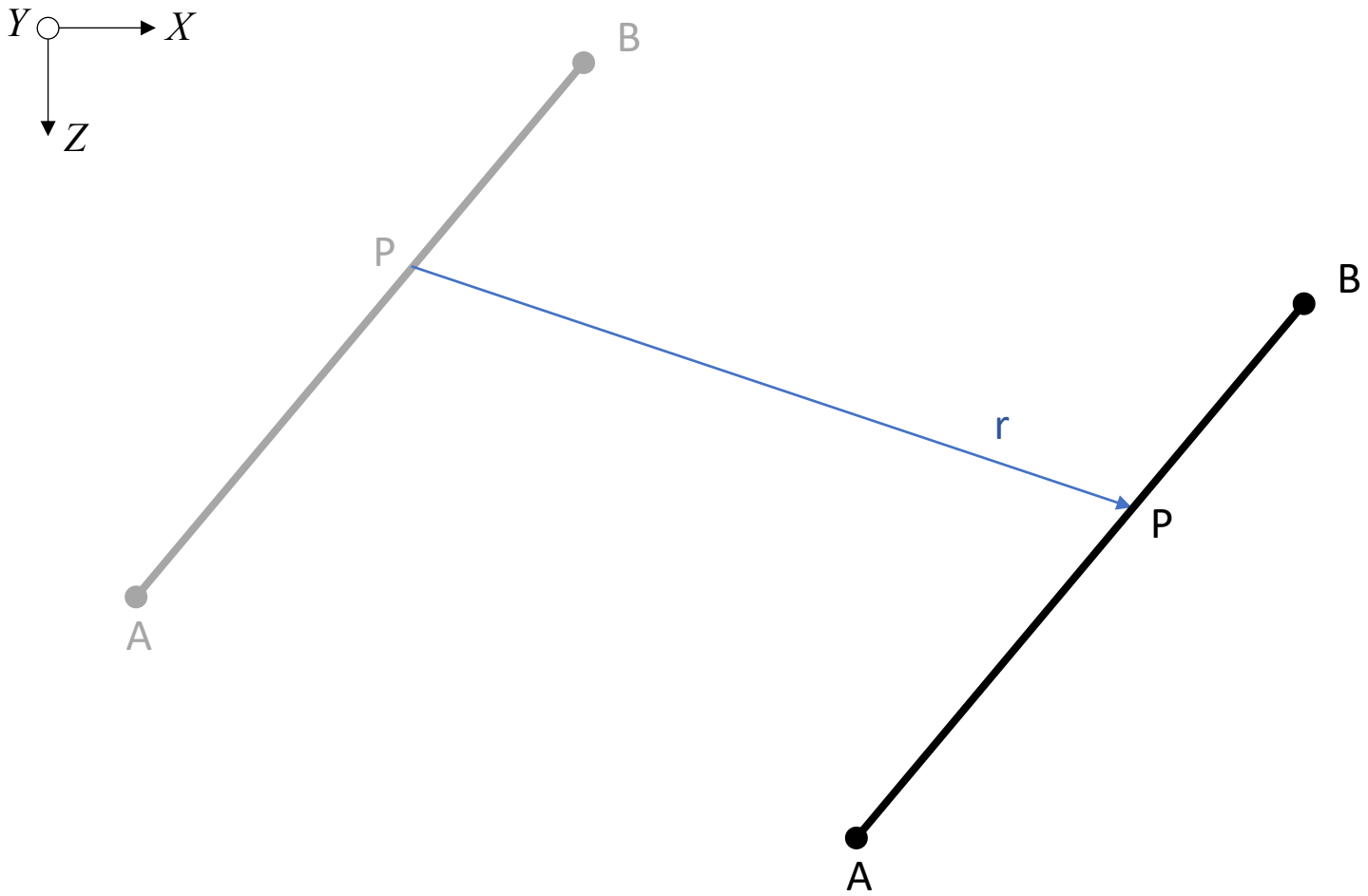
Translation



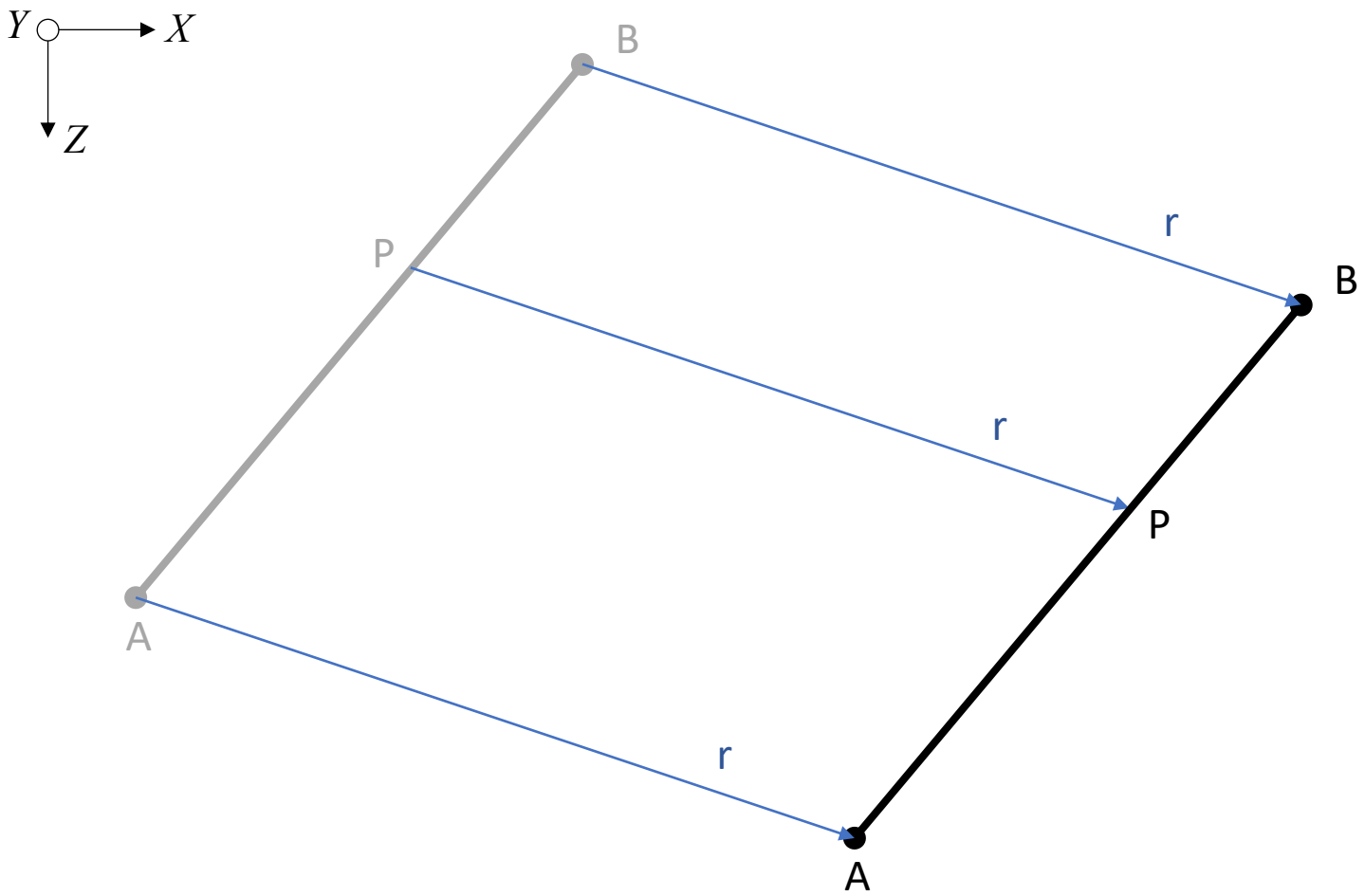
Translation



Translation

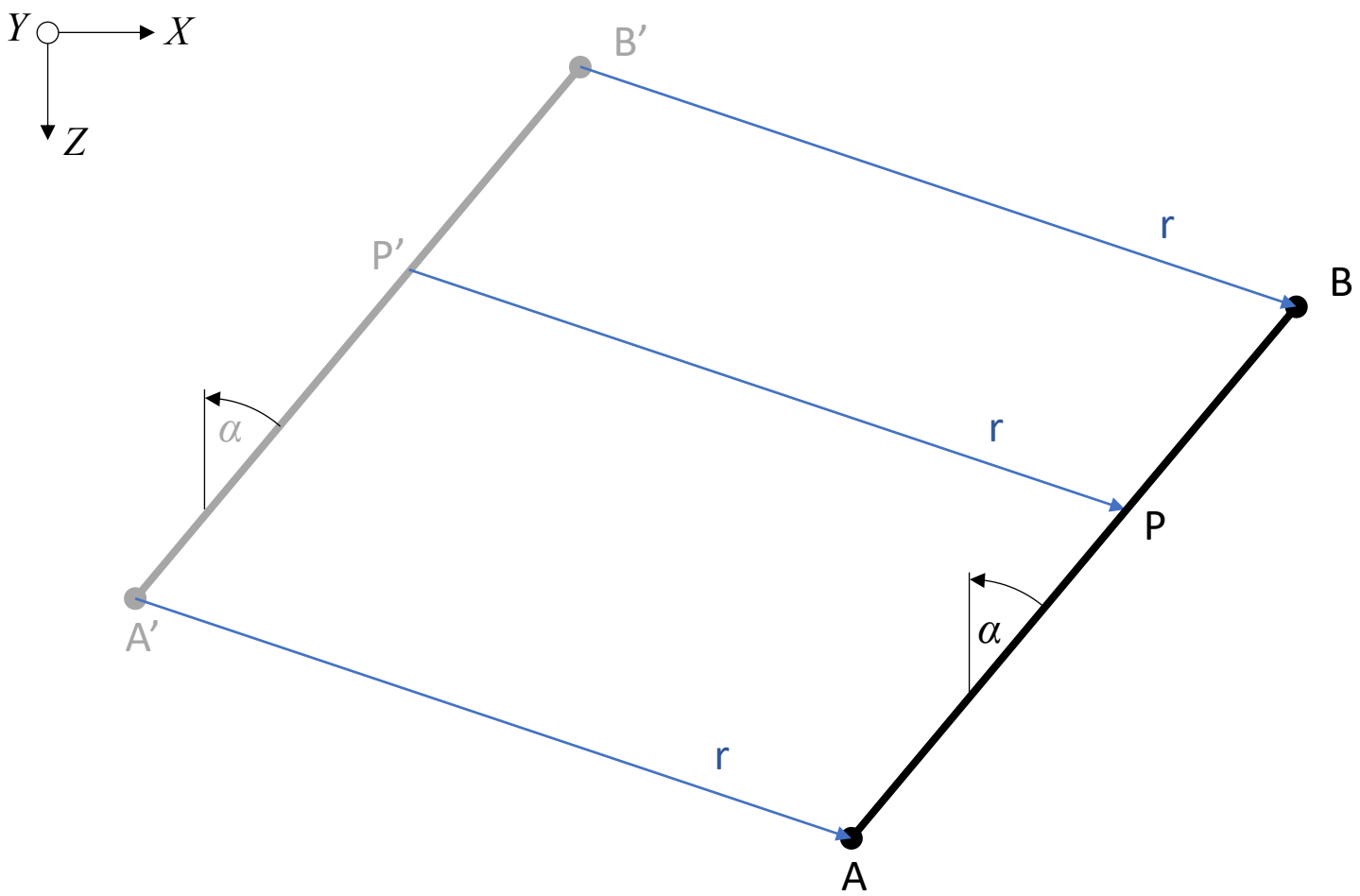


Translation



Kinematik des Einzelstabes

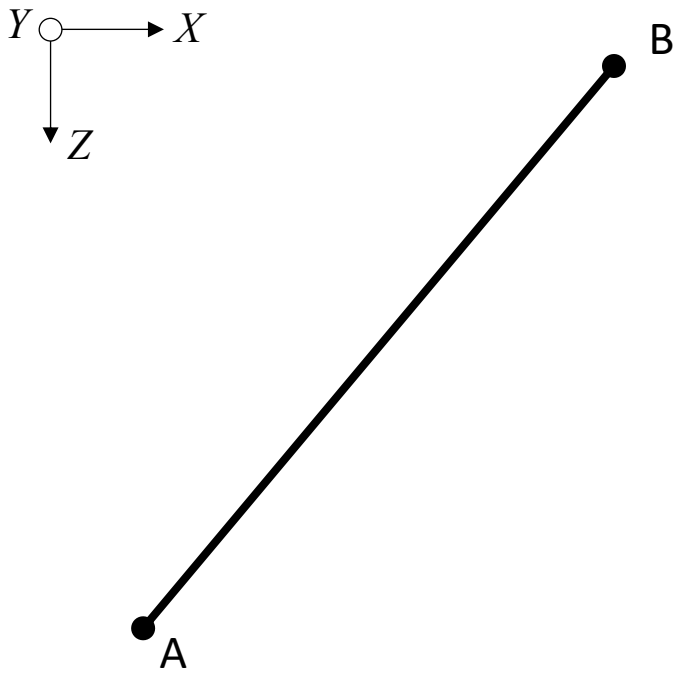
Translation



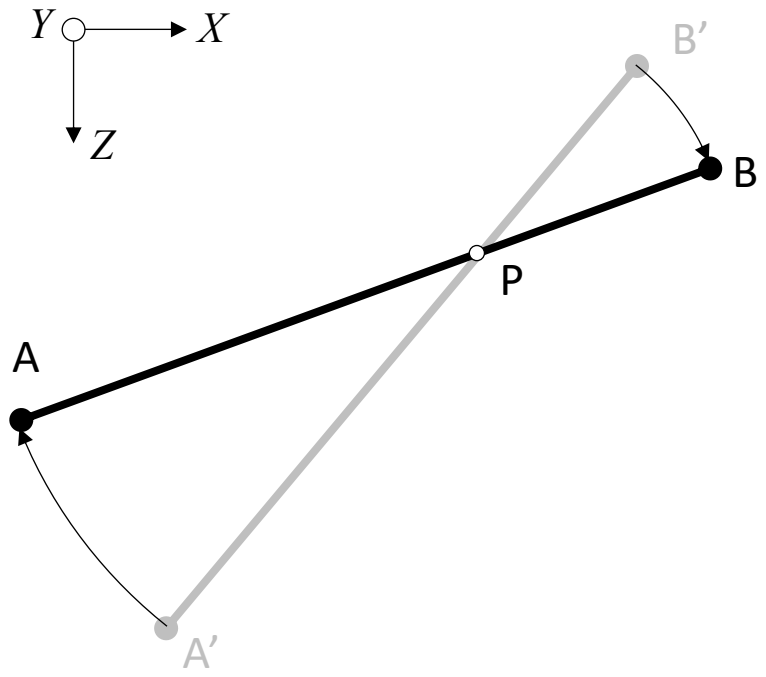
$$\left|\overrightarrow{A'B'}\right| = \left|\overrightarrow{AB}\right|$$

$$|\vec{r}| = \left|\overrightarrow{B'B}\right|$$

Rotation



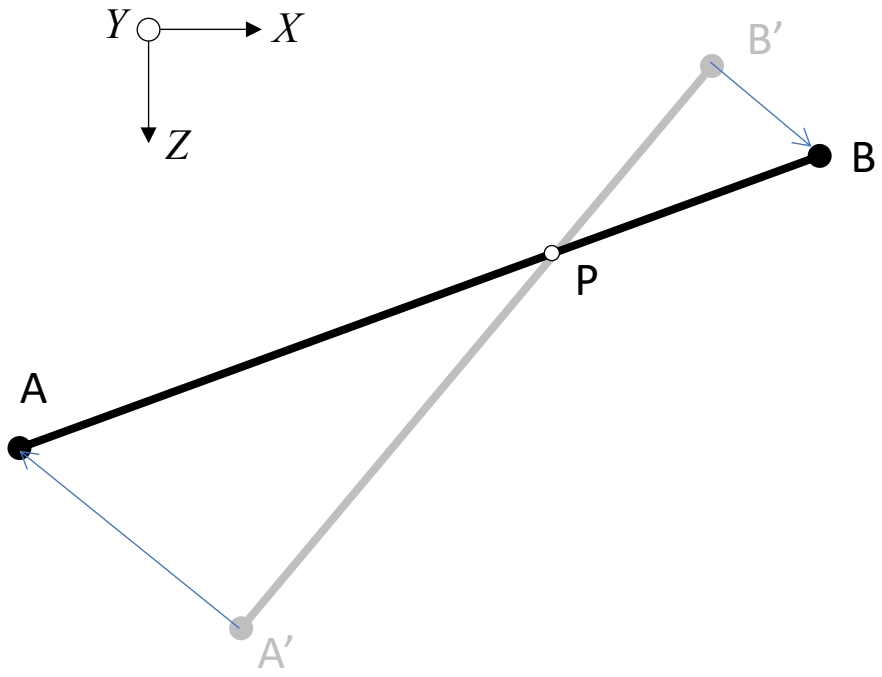
Rotation



P… Drehpol

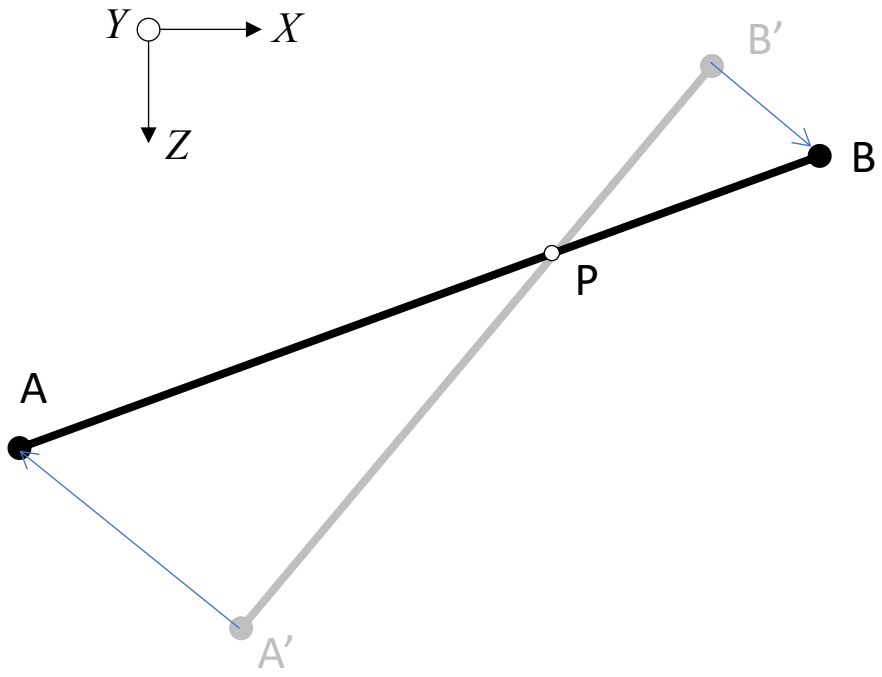
Rotation - Lineariesierung

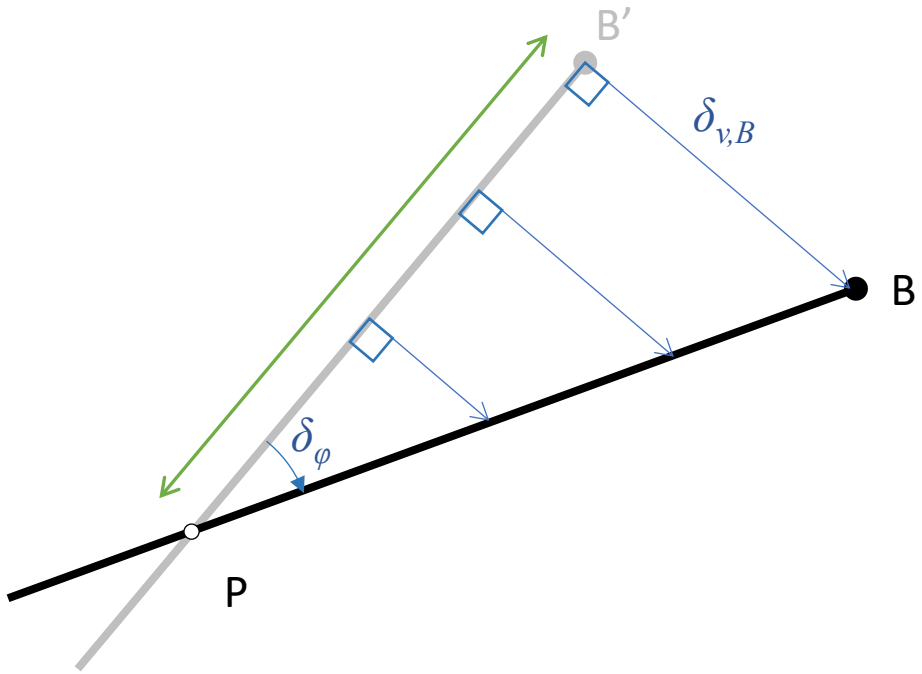
P… Momentanzentrum



Rotation – Linearisierung

P… Momentanzentrum





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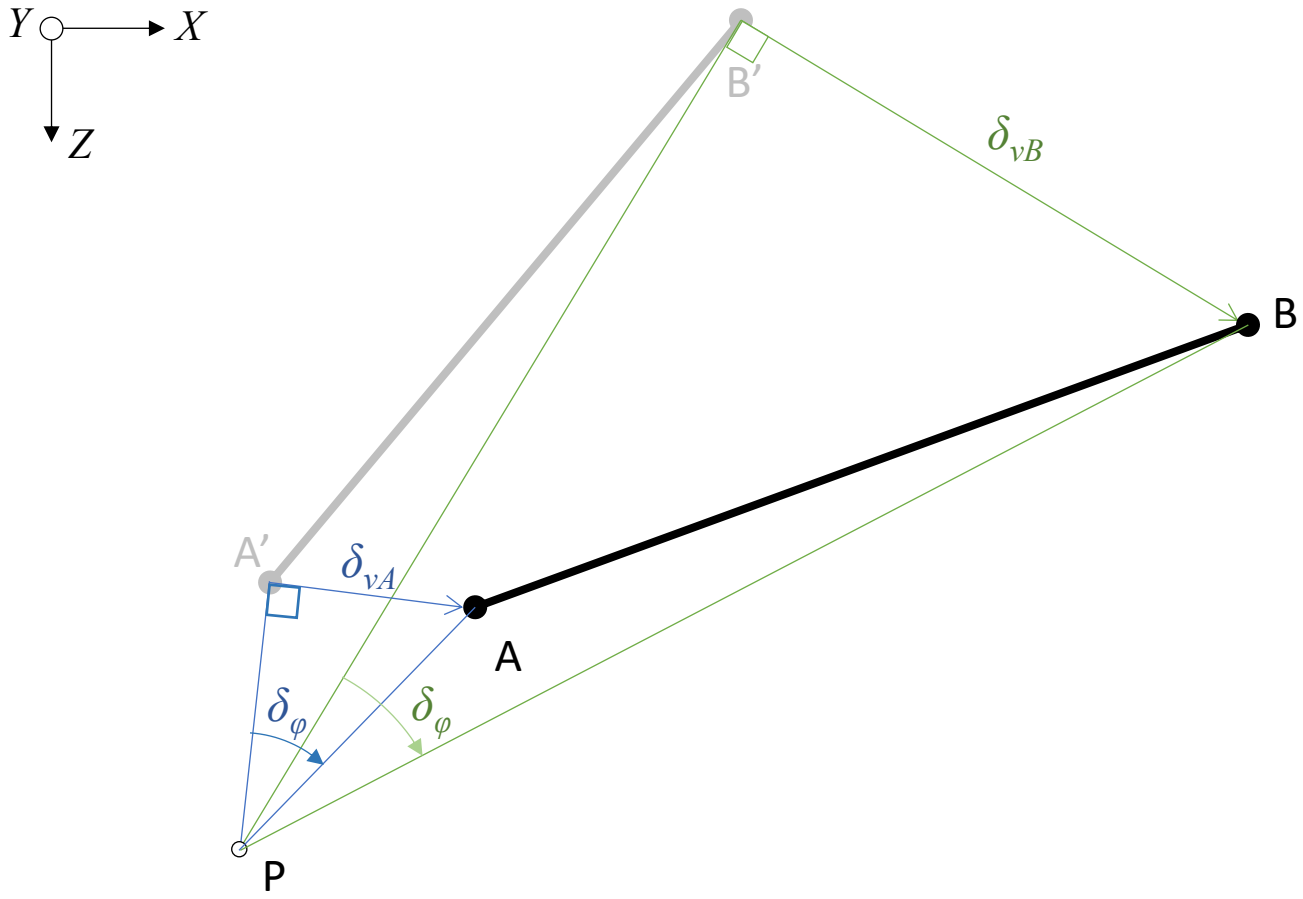
Allgemeine Bewegung

P… Momentanzentrum



$$\delta_{vXA} = h\delta_\varphi$$
$$\delta_{vZA} = l\delta_\varphi$$
$$\delta_{vA}^2 = \delta_{vXA}^2 + \delta_{vZA}^2 = \delta_\varphi{}^2(h^2 + l^2)$$
$$\delta_{vA} = \delta_\varphi\sqrt{h^2 + l^2}$$

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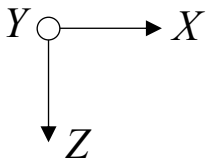
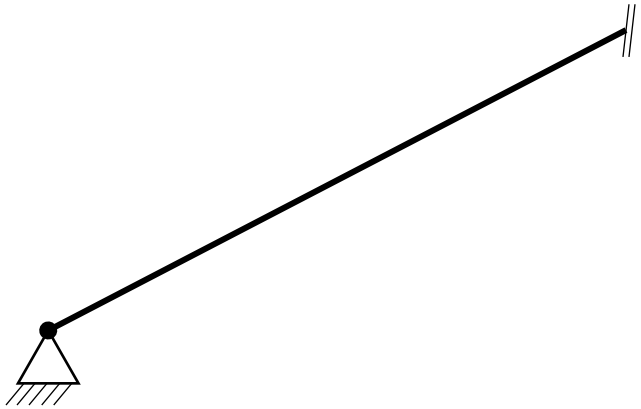
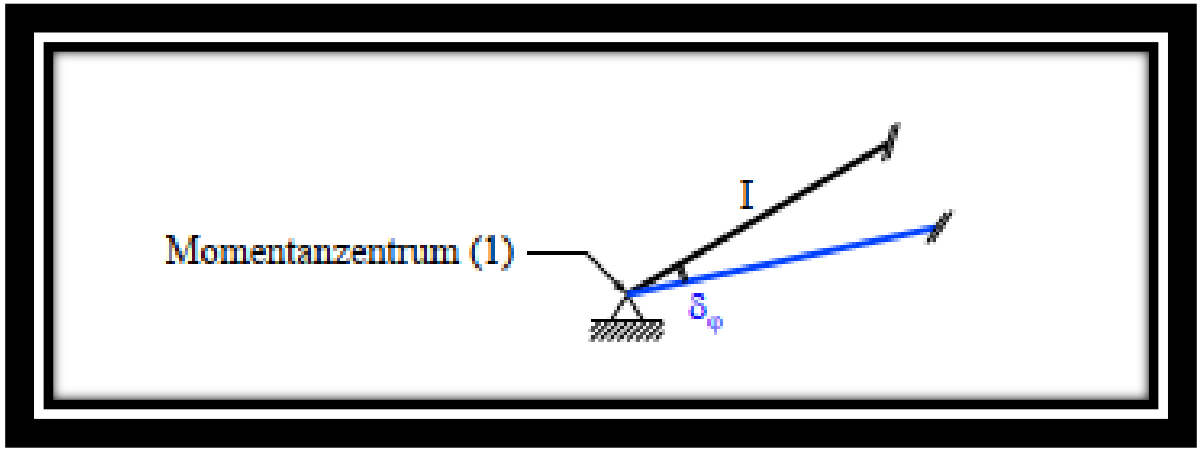
Polplan und Verschiebungsfiguren

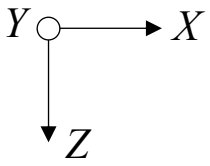


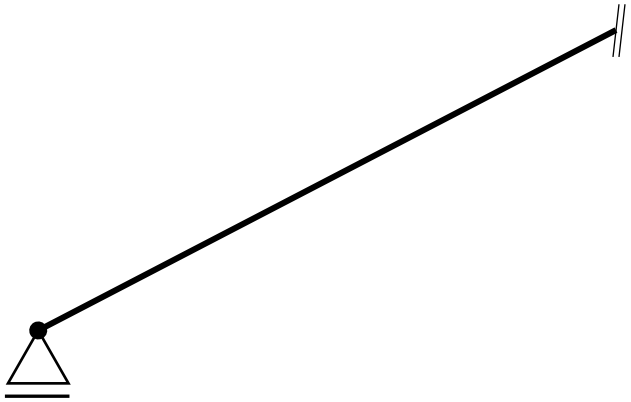


Festes Lager

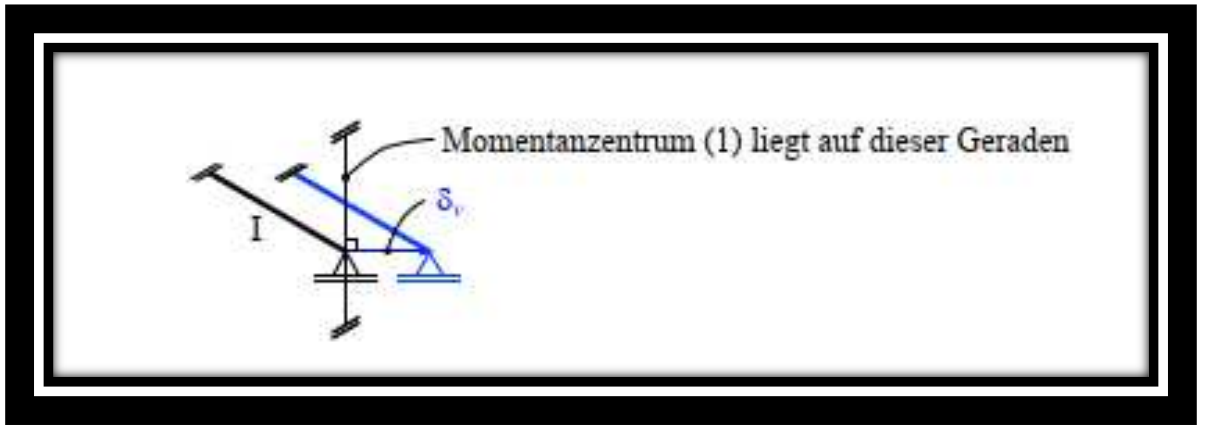


Polplan und Verschiebungsfiguren

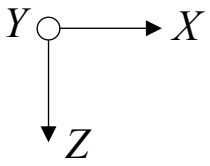


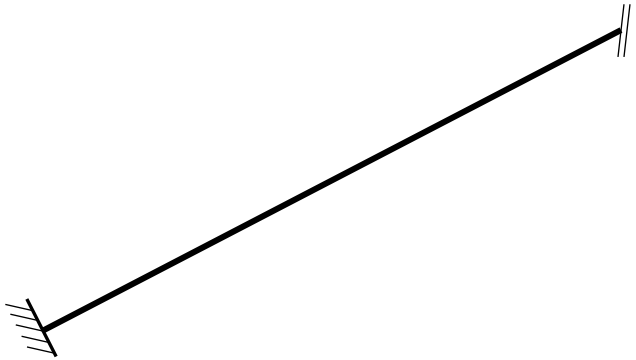


Gleitlager



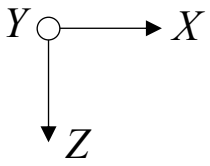
Polplan und Verschiebungsfiguren

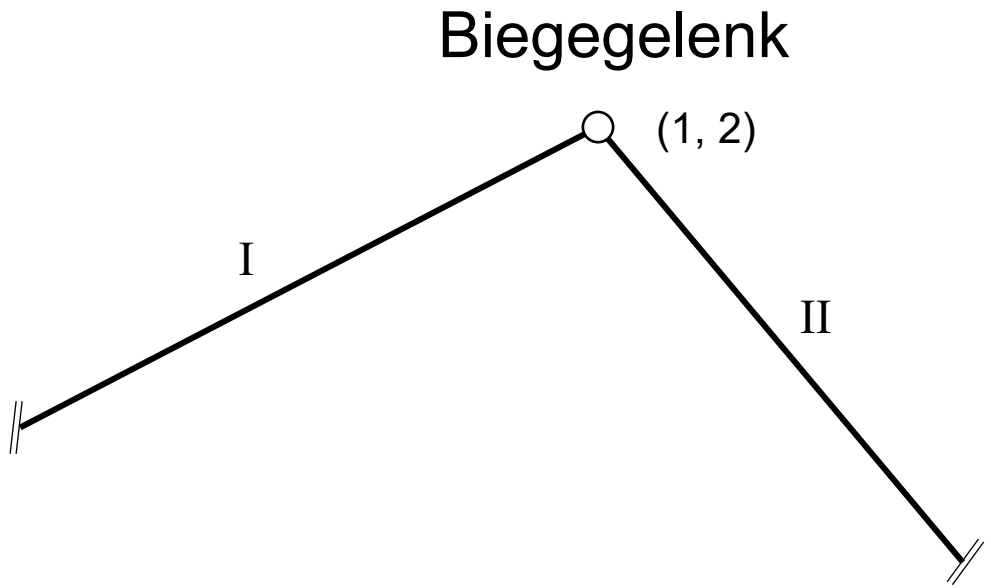




Einspannung

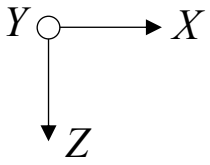
Polplan und Verschiebungsfiguren



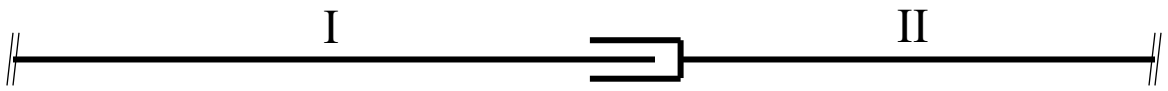


(1, 2)… relatives Momentanzentrum der Stäbe 1 und 2

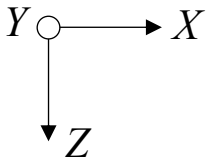
Polplan und Verschiebungsfiguren



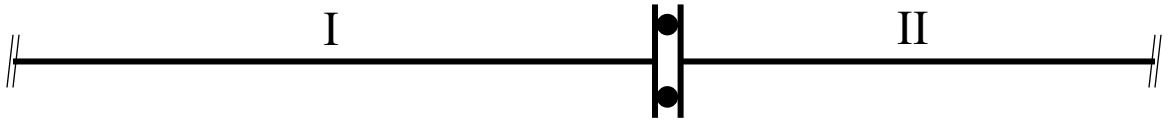
Normalkraftgelenk



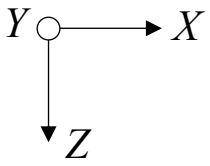
Polplan und Verschiebungsfiguren

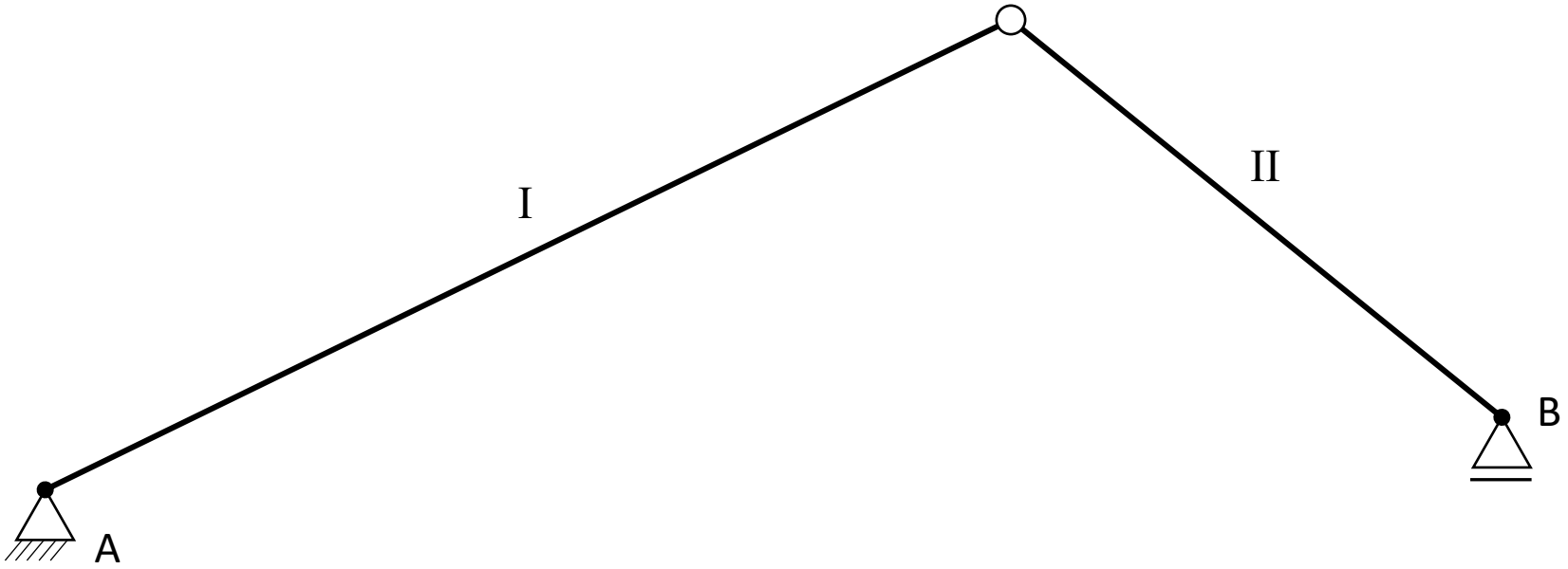


Querkraftgelenk

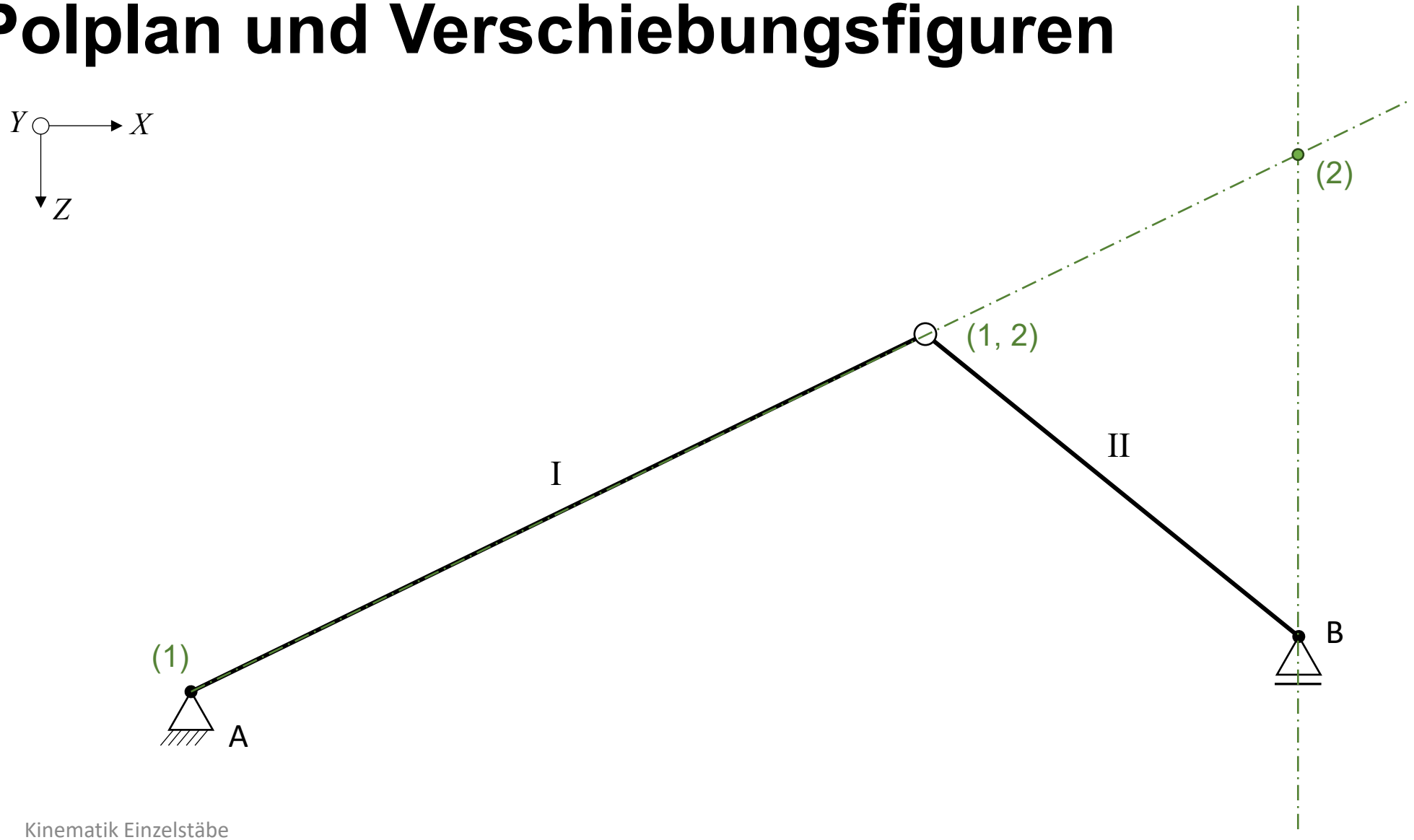


Polplan und Verschiebungsfiguren





Polplan und Verschiebungsfiguren



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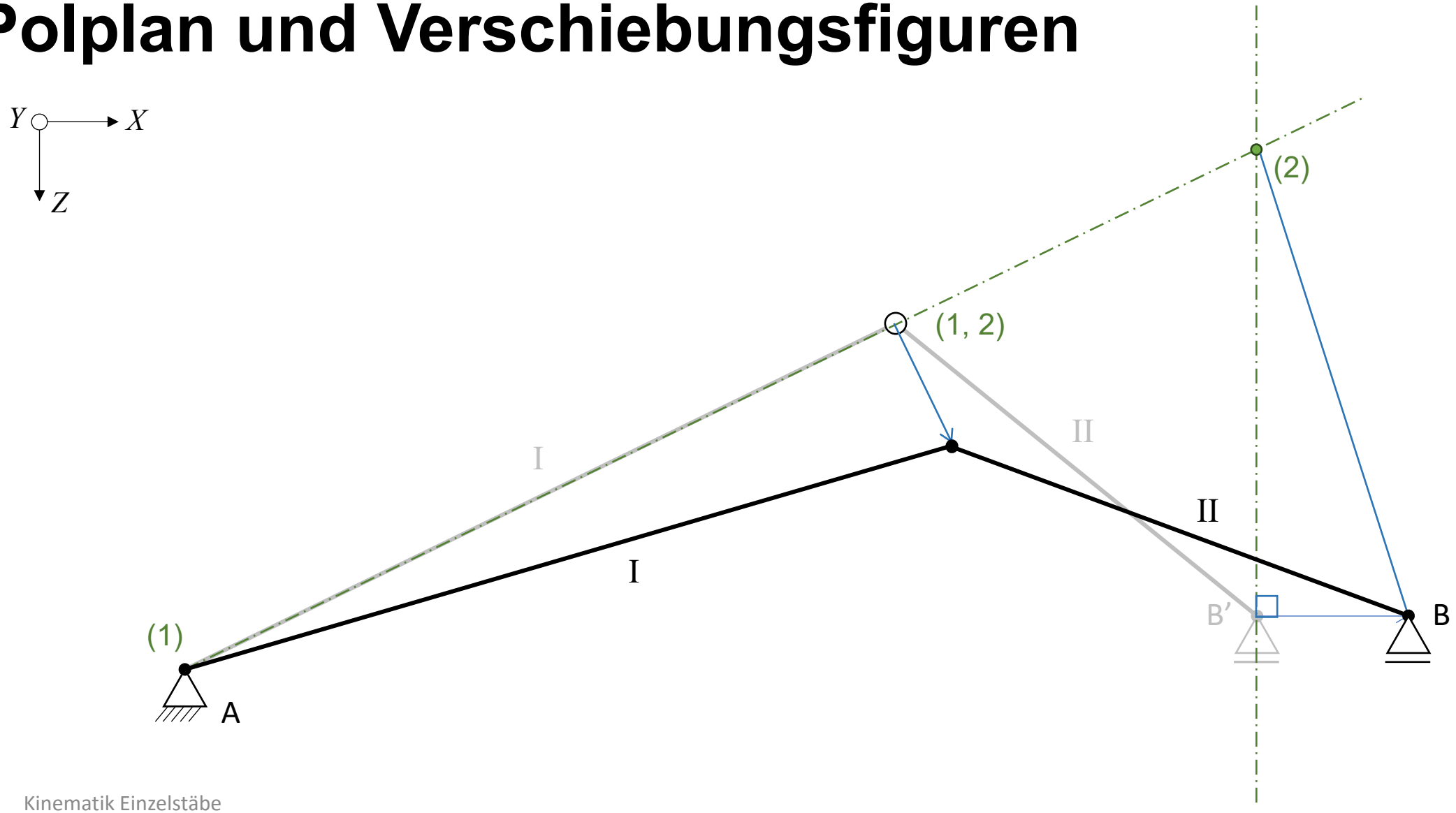
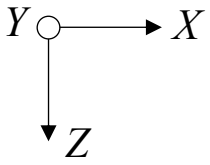
Polplan und Verschiebungsfiguren



Polplan und Verschiebungsfiguren



- Die relativen Momentanzentren (i,j), (j,k), (i,k) dreier Scheiben I, J, K liegen jeweils auf einer Geraden (i,j) - (j,k) - (i,k)

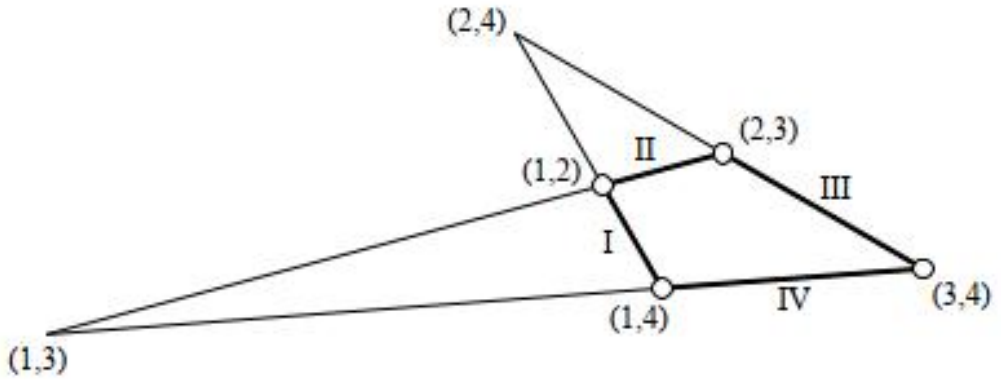


Bild 1.9: Momentanzentren vier Scheiben I bis IV mit gemeinsamen, relativen Momentanzentren

Polplan und Verschiebungsfiguren - Beispiele

