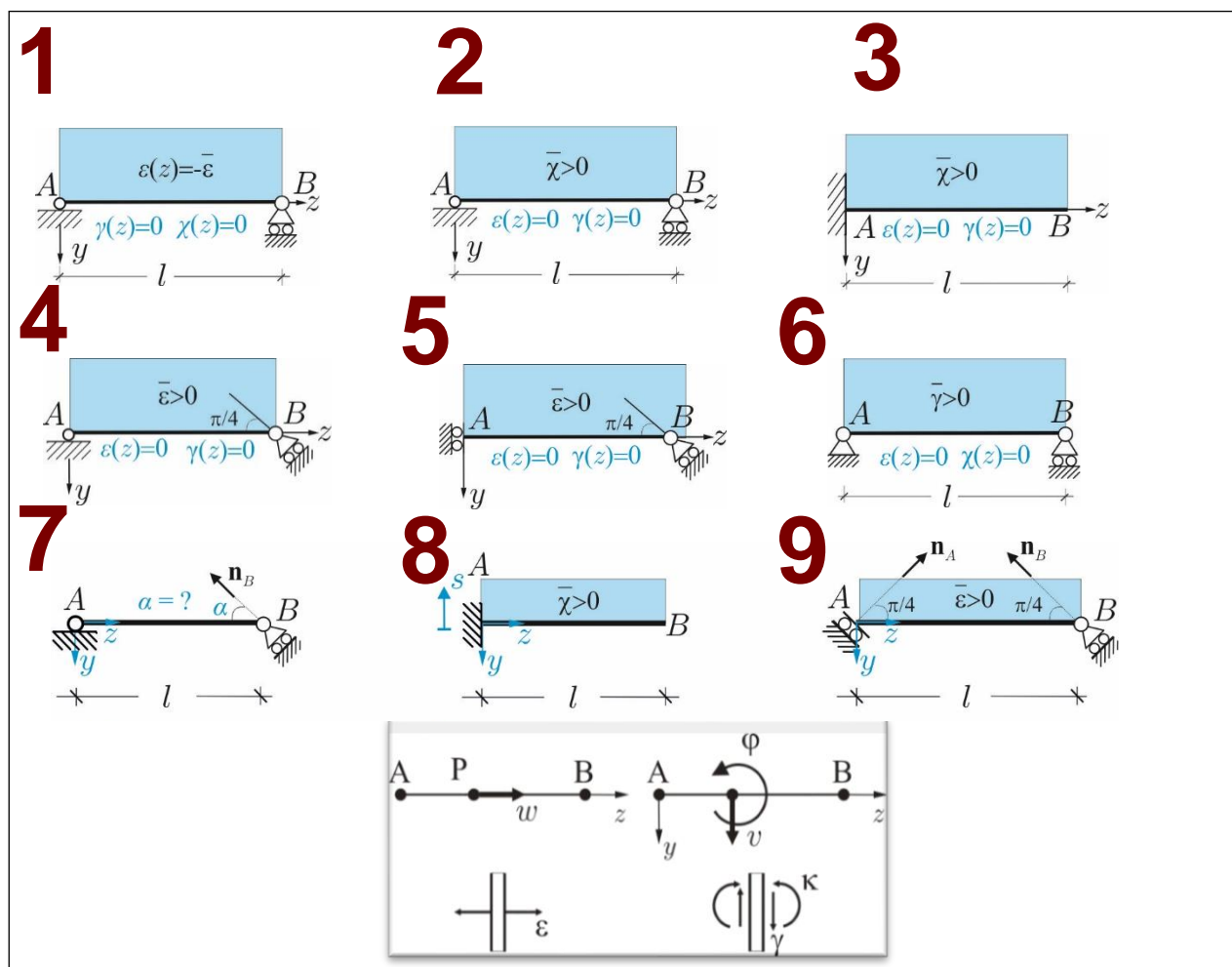


(E07)

Trave elastica: problema cinematico

Problemi 1-6, 8-9. Assegnati i campi di deformazione e i cedimenti vincolari in figura, determinare il campo di spostamenti con essi congruenti e disegnare la configurazione deformata della trave. **Problema 7.** Si consideri la trave 7: nel sistema di riferimento locale in figura sono assegnate le seguenti funzioni di spostamento e rotazione cinematicamente congruenti: $w(z) = \bar{\varepsilon}z$, $v(z) = -\sqrt{3}\bar{\varepsilon}z$, $\varphi(z) = \sqrt{3}\bar{\varepsilon}$. Determinare l'angolo α fra l'asse del carrello (di versore \mathbf{n}_B) e l'asse della trave.



1. Beam AB of length l . Support: pin at A, roller at B. Deformation: $\varepsilon(z) = -\bar{\varepsilon}$, $\gamma(z) = 0$, $\chi(z) = 0$.

2. Beam AB of length l . Support: pin at A, roller at B. Deformation: $\bar{\chi} > 0$, $\varepsilon(z) = 0$, $\gamma(z) = 0$.

3. Beam AB of length l . Support: fixed at A, roller at B. Deformation: $\bar{\chi} > 0$, $\varepsilon(z) = 0$, $\gamma(z) = 0$.

4. Beam AB of length l . Support: pin at A, roller at B. Deformation: $\bar{\varepsilon} > 0$, $\varepsilon(z) = 0$, $\gamma(z) = 0$. Rotation at B is $\pi/4$.

5. Beam AB of length l . Support: fixed at A, roller at B. Deformation: $\bar{\varepsilon} > 0$, $\varepsilon(z) = 0$, $\gamma(z) = 0$. Rotation at B is $\pi/4$.

6. Beam AB of length l . Support: pin at A, roller at B. Deformation: $\bar{\gamma} > 0$, $\varepsilon(z) = 0$, $\chi(z) = 0$.

7. Beam AB of length l . Support: pin at A, roller at B. Deformation: $w(z) = \bar{\varepsilon}z$, $v(z) = -\sqrt{3}\bar{\varepsilon}z$, $\varphi(z) = \sqrt{3}\bar{\varepsilon}$. Angle α is to be determined.

8. Beam AB of length l . Support: fixed at A, roller at B. Deformation: $\bar{\chi} > 0$.

9. Beam AB of length l . Support: pin at A, roller at B. Deformation: $\bar{\varepsilon} > 0$, $\varepsilon(z) = 0$, $\gamma(z) = 0$. Rotations at A and B are $\pi/4$.

Legend for deformation fields:

- ε : normal strain (horizontal arrow)
- γ : shear strain (vertical arrow)
- χ : rotation (curved arrow)
- w : horizontal displacement (horizontal arrow)
- v : vertical displacement (vertical arrow)
- φ : rotation (curved arrow)

COGNOME.....
NOME.....
MAT.....

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Soluzioni: cap. 5, § 5.9-5.11 (4° edizione)