

1.5.2 Symmetry of the Stiffness Matrix

$$K_{21} = K_{12}$$

$$K_{ab} = K_{ba} \quad ; \quad (a, b = 1..n) \quad .$$

$$[K] =$$

$$\frac{EA}{l} \begin{bmatrix} 1 + \frac{1}{2\sqrt{2}} & \frac{-1}{2\sqrt{2}} & -1 & . & \frac{-1}{2\sqrt{2}} & \frac{1}{2\sqrt{2}} & . & . & . & . \\ \frac{-1}{2\sqrt{2}} & \frac{1}{2\sqrt{2}} & . & . & \frac{1}{2\sqrt{2}} & \frac{-1}{2\sqrt{2}} & . & . & . & . \\ -1 & . & 2 & . & . & . & -1 & . & . & . \\ . & . & . & 1 & . & -1 & . & . & . & . \\ \frac{-1}{2\sqrt{2}} & \frac{1}{2\sqrt{2}} & . & . & 1 + \frac{1}{\sqrt{2}} & . & \frac{-1}{2\sqrt{2}} & \frac{-1}{2\sqrt{2}} & -1 & . \\ \frac{1}{2\sqrt{2}} & \frac{-1}{2\sqrt{2}} & . & -1 & . & 1 + \frac{1}{\sqrt{2}} & \frac{-1}{2\sqrt{2}} & \frac{-1}{2\sqrt{2}} & . & . \\ . & . & -1 & . & \frac{-1}{2\sqrt{2}} & \frac{-1}{2\sqrt{2}} & 1 + \frac{1}{2\sqrt{2}} & \frac{1}{2\sqrt{2}} & . & . \\ . & . & . & . & \frac{-1}{2\sqrt{2}} & \frac{-1}{2\sqrt{2}} & \frac{1}{2\sqrt{2}} & \frac{1}{2\sqrt{2}} & . & . \\ . & . & . & . & -1 & . & . & . & 1 & . \\ . & . & . & . & . & . & . & . & . & . \end{bmatrix}$$