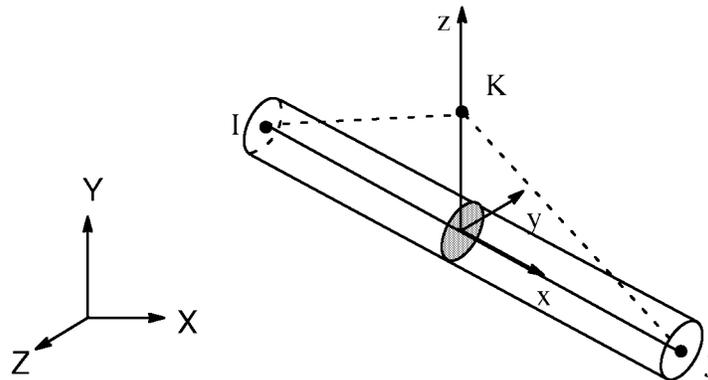


14.188 BEAM188 — 3-D Finite Strain Linear Beam



Matrix or Vector	Shape Functions	Integration Points
Stiffness Matrix	Equations (12.2.1-1), (12.2.1-2), (12.2.1-3), (12.2.1-4), (12.2.1-5) and (12.2.1-6)	Along the length: 1 Across the section: see Section 14.189
Mass Matrix	Same as stiffness matrix	Along the length: 2 Across the section: 1
Stress Stiffness Matrix	Same as stiffness matrix	Same as stiffness matrix
Thermal Load Matrix	Same as stiffness matrix	Same as stiffness matrix
Pressure Load Vector	Same as stiffness matrix	Same as mass matrix
Newton-Raphson Load Vector	Same as stiffness matrix	Same as stiffness matrix

Load Type	Distribution
Element Temperature	Bilinear across cross-section and linear along length (see Section 14.24.3 for details)
Nodal Temperature	Constant across cross-section, linear along length
Pressure	Linear along length. The pressure is assumed to act along the element x-axis.

References: Simo and Vu-Quoc(237), Ibrahimbegovic(238).

The theory for this element is the same as BEAM189 described in Section 14.189, except that it is a linear, 2-noded beam element.