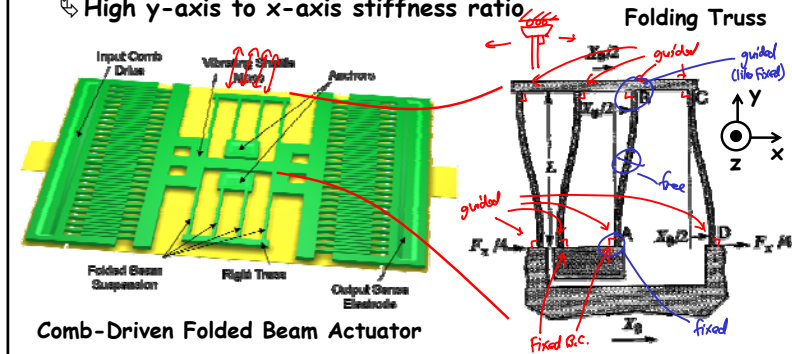


## Folded-Flexure Suspensions

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## Folded-Beam Suspension

- Use of folded-beam suspension brings many benefits
  - ↳ Stress relief: folding truss is free to move in y-direction, so beams can expand and contract more readily to relieve stress
  - ↳ High y-axis to x-axis stiffness ratio



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## Beam End Conditions

TABLE 4.1  
Types of commonly used support conditions for beams and frames

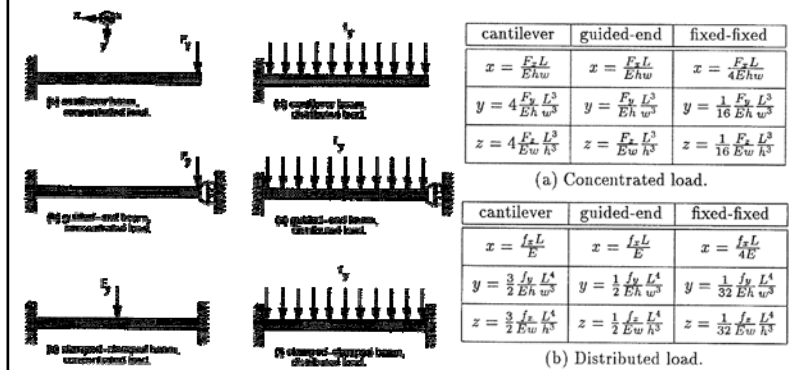
Type of support	Displacement boundary conditions	Force boundary conditions
 FREE	None	All, as specified
 PINNED	$u = 0$ $w = 0$	Moment is specified
 ROLLER (vertical)	$u = 0$	Transverse force and moment are specified
 ROLLER (horizontal)	$w = 0$	Horizontal force and bending moment are specified
 FIXED or CLAMPED	$u = 0$ $w = 0$ $dw/dx = 0$	None specified

[From Reddy, Finite Element Method]

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## Common Loading & Boundary Conditions

- Displacement equations derived for various beams with concentrated load  $F$  or distributed load  $f$
- Gary Fedder Ph.D. Thesis, EECS, UC Berkeley, 1994



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