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Comparative study of tangential stress in curved beams M A MUKTADIR, PAUL AKANGAH, SUN YI, North Carolina AT State University — Many researchers have attempted to find the solution to the problem of the state of in a curved beam under load. However, the values of stresses arrived at failed to satisfy the boundary conditions in a satisfactory way. Curved beams find important practical applications in chain links, crane hooks, pipe bends and curved segments of machine tool frames. Accurate determination of stresses in curved beams is important to prevent catastrophic failure leading to loss of property and life. This study uses various methods including advanced computational tools to compare the strength of materials (SOM), elasticity analysis (EA), and the finite element analysis (FEA) of the curved beam tangential stress of various sections. For the SOM analysis, three different cross-sections have been considered, for EA two airy functions have taken for calculation of tangential stress, and for FEA, ANSYS have been used for the analysis of rectangular, square, and circular 3D curved beam.

M A Muktadir
North Carolina A
T State University

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