

Computer-aided design of durable and economical structures

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There are many porous and framed structures around the world that effectively utilize limited resources. These structures consist of long, slender members and offer advantages in terms of economical cost, lightweight, ventilation, and spacious interiors. However, they are susceptible to collapse due to stress concentration among some members. In this lecture, students first study the inherent mechanical soundness of porous and framed structures, such as honeycomb structure, truss bridge, and arch bridge. Leveraging this knowledge, students design porous beams optimized in terms of internal stress dispersion and deformation resistance through numerical simulations for some bending problems.

