

Void structures, systems and devices with void structures, and methods of fabricating void structures are disclosed. A void structure is disclosed with a repeating elongated-aperture pattern designed to provide negative Poisson's Ratio behavior under macroscopic stress and strain loading. The pattern can include horizontal and vertical elliptically shaped apertures that are arranged on horizontal and vertical lines in a way that the lines are equally spaced in both dimensions. The centers of each aperture is on a crossing point of two of the lines. The vertical and horizontal elliptically shaped apertures alternate on the vertical and horizontal lines such that any vertical aperture is surrounded by horizontal apertures along the lines (and vice versa), and the next vertical apertures are found on both diagonals. The voids can also act as cooling and/or damping holes and, due to their arrangement, also as stress reduction features.