

## Metamaterial Helmet Improves MRIs



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Boston University (Boston, MA USA) researchers recently described in *Advanced Materials* a helmet that can be worn during MRIs to halve scan time and improve image quality. The helmet was designed by a research team led by Professor Xin Zhang at Boston University's Photonics Center. The team focuses on metamaterials, which are engineered structures created from small cell units.

The helmet consists of 3D-printed plastic tubes wrapped in copper wire and of an array of unit cells (resonators). Each of these is arranged in a repeating pattern of rows and columns, which can manipulate an MRI's magnetic field and reduce the signal to noise ratio. These resonators are arranged in a helmet-shaped device worn over a person's head while being imaged. Thus, brain images can be obtained with higher resolution in less time.

This technology has the potential to be used with cheaper low-field MRI machines to produce better images and thus can help make MRI more common in the developing world. Other applications of metamaterial include acoustic metamaterials that can block sound without blocking airflow.

Source: [Advanced Materials](#)

Published on : Tue, 1 Mar 2022