

Sonic crystals to fight noise pollution

NUS researchers have developed a prototype window made of “sonic crystals” that can halve the loudness of traffic and construction noise entering a room through the window.

Window frame

Louvre

- Parallel tubes to block sound waves.

- Orientation of louvre does not significantly affect sound-blocking properties.

Hollow tube with slits

Acts as a Helmholtz resonator to further absorb noise of specific frequencies, depending on the distance between slits and number of partitions inside.

Slits facing outdoors

Noise

Noise reduced

Sawtooth edge

Further cuts noise through destructive interference of sound waves.

The researchers' experiments indicate that the sonic crystal window can reduce traffic and construction noise by almost 10 decibels, which translates to a halving of loudness.

This is 5dB or about 30 per cent better than a normal window with glass louvres.

NOTE: Drawing is not to scale.