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New technique manipulates water waves to precisely control floating objects

Where there is water, there are waves. But what if you could bend water waves to your will to move floating objects?

NTU Singapore co-led a team of international researchers who achieved this with physics.

The scientists developed a technique to merge waves they created in a water tank. Combining the waves produced complex patterns. The patterns made twisting loops of water and swirling vortices.

The patterns pulled nearby floating objects, such as a foam ball or ping pong ball, into them. Some patterns acted like tweezers or a "tractor beam" to hold the ball in place. Other patterns made the ball spin and move precisely in a circular path, according to Assistant Professor Shen Yijie, one of the co-leads of the research from NTU Singapore's School of Physical and Mathematical Sciences, and School of Electrical and Electronic Engineering.

This method opens new possibilities for using water waves. It could be scaled down to precisely move particles the size of cells for experiments, or scaled up to guide boats along a desired path on the water.

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