

The Stochastic Scientist

Science-- there's something for everyone

Stochastic Scientist? What's up with that?

Why the Stochastic Scientist? As I'm sure you all know, 'stochastic' is another word for 'random', which is what I intend for the focus of this blog. Although my formal training is as a molecular biologist, there are many other fields of science that are also fascinating and beautiful. It's my intention to blog about which ever scientific discovery or invention catches my, and hopefully your, fancy.

I also hope to inspire people to learn more about science. By choosing among a huge variety of scientific endeavors, I'll undoubtedly hit upon something that will pique my readers' interest.

I guess I could have called my blog 'The Joy of Science', but that wouldn't have been quite so random.



Monday, November 29, 2010

Sonar for bubbly water

Standard [sonar](#) devices, which work by using the echoes of sound pulses to identify objects, are blinded by clouds of bubbles. This makes them ineffective in shallow water where waves are breaking, or near the wakes of ships. Timothy Leighton and his colleagues from the University of Southampton have [invented a way to solve this problem](#). Their method, [called twin inverted pulse sonar](#) (TWIPS) can see through bubbles.

TWIPS uses two inverted sound pulses emitted a fraction of a second apart. In combination, the pulses enhance the scatter from a target while simultaneously suppressing clutter from interfering bubbles.

Leighton and his team tested TWIPS both in a large tank and at sea. They were able to detect objects despite interference from lab-created bubbles or oceanic waves. In either case, TWIPS outperformed standard sonar devices.

Interestingly, Leighton got the idea of developing a sonar device that could see through bubbles by observing wild dolphins. Some dolphins use their sonar to make bubble nets to confuse and trap prey. However, if dolphin sonar worked like conventional man-made sonar, this would mean that the dolphins were blinding themselves to the prey within their own bubble nets, an unlikely prospect. There had to be a way to counteract the bubbles. Because no one has taken sonar recordings of bubble-net hunting dolphins, it's not clear whether they use a system like TWIPS or something completely different. In either case, observing the dolphins provided the spark that led to Leighton's breakthrough.

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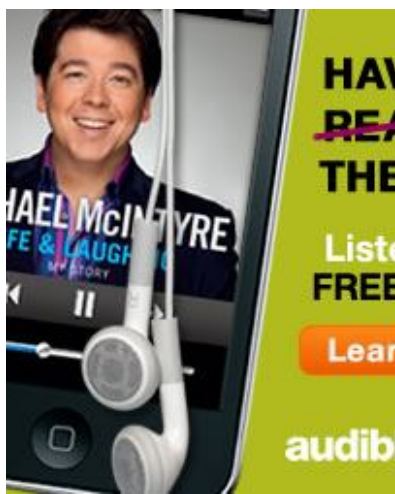
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Posted by Kathy Orlinsky at 4:00 AM

Labels: sonar



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About Me



Kathy Orlinsky

I'm a molecular biologist by training, having graduated with a Ph.D. from the University of California, Irvine in 1994. I've spent the intervening years at home, raising a little scientist.

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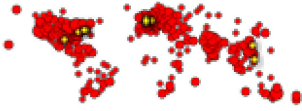
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