

Technology: [Coherence gated doppler motion sensor and medical applications](#)

VA ID Number: 12-290

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Location: Baltimore, MD

Topic: Diagnostic

USPTO Issue Date: 11/08/2016

Patent Number: 9,486,140

The VA jointly owns this patent with the University of Maryland, Baltimore and College Park and St. Jude Medical

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Abstract: A motion sensor applicable to medical procedures includes a source of light with a wavelength bandwidth and an optical detector. A first optical coupler terminates in a first probe tip and couples the light into the first probe tip. A second optical coupler terminates in a second probe tip and directs onto the detector scattered light returning through the second probe tip. A presentation device outputs a signal that indicates motion in a target volume of a sample in a vicinity of the probe tips based on a Doppler shift of the scattered light. The volume depends on coherence distance determined by the bandwidth. In variations, the first and second tips are the same tip, a multimode fiber is included, the bandwidth is between 0.1% and 5% of a center wavelength, or the presentation device is a speaker, or some combination.