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Blacksburg, VA 24060. *Accelerating Thermoacoustic Tomography*. Preliminary report.

Thermoacoustic Tomography (TAT) is an imaging technique used to display a cross section through a solid object. TAT exceeds the health benefits of other tomographic methods such as x-ray and ultrasound because it does not require as much radiation, making it a safer alternative. However, like many inverse problems, the process of TAT is extremely involved and subsequently still under development. This research investigates computational improvements to TAT that increase the method's efficiency as well as overall accuracy. (Received September 20, 2016)