

Technology: [Apparatus and method for tracking movement of a target](#)

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Abstract: The present invention discloses an apparatus and method to track the movement of a target. One embodiment tracks the movement of the patient during medical imaging scanning using optical technology. Optical systems record the position and movement of the target and provide inputs to a processor. The processor is capable of performing mathematical analysis of the movement of the target to determine the positional shift of the patient. Weighted averages, phase correlation, Fourier-Mellin algorithms, and cross-correlation of data related to X-Y translation are used to calculate movement of the target subject. Feedback related to the movement is provided to the medical imaging scanning machine which allows for adjustments in focusing coils for real time tracking of the patient's movements during the procedure. As a result, the medical image scanning procedure becomes more accurate as it is adjusted for the patient's movements.