# Improved Diagnostic Method for Retinal Examinations in Children

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## Technology description

Invention Novelty

A novel ocular optical coherence tomography (OCT) diagnostic device to perform retinal examinations in children using a combined optical coherence tomography and retinal birefringence scanning technology.

Value Proposition

OCT is a relatively new diagnostic modality that allows a physician to view micrometer resolution images of the retina and macula, allowing for precise ocular examinations. However existing systems do not allow the user to monitor the 2D/3D images in true real-time, and therefore it can be difficult to obtain high-quality images from patients who do not focus on the target (children, patients in need of sedation/anesthesia). This invention mitigates this problem by combining conventional OCT technology with retinal birefringence scanning (RBS), which can detect whether the patient' s fovea is focused on a given target. Only when the fovea is fixated does the OCT system begin scanning the eye for images.

Technical Details

Johns Hopkins researchers have created a highly accurate OCT imaging system that operates in conjunction with an RBS system to increase diagnostic accuracy of retinal examinations. RBS detects foveal fixation based on characteristic frequency changes in the incoming near-infrared signal. When fixation is detected, RBS signals the OCT system to begin scanning the retina. Diagnostic images are therefore only collected when the fovea is fixed on the target. The RBS and OCT systems are optically coincident with each other, enabling this system to function.

## Advantages

- The technology can be adapted to most forms of existing OCT imaging – time-domain OCT, FDOCT (frequency domain OCT) and SDOCT (spectral domain OCT)
- Facilitates early diagnosis of retinal diseases in children and uncooperative patients who need sedation or anesthesia for retinal examinations

## Institution

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