**Canadian Association of Physicists**

**Association canadienne des physiciens et physiciennes**

Contribution ID: **4418** Type: **Oral Competition (Graduate Student) / Compétition orale (Étudiant(e) du 2e ou 3e cycle)**

# (G*) Realization of automated whole breast 3D Doppler ultrasound for characterization of breast lesions

*Wednesday 29 May 2024 09:00 (15 minutes)*

Breast cancer is the most common cancer in women worldwide. Two million women are diagnosed annually, resulting in 685,000 deaths. Early diagnosis is critical to reducing mortality. Although mammography is the gold standard, dense breast tissues reduce detection sensitivity, potentially delaying diagnoses. Therefore, there is a need for more accessible and cost-effective supplemental screening technologies, especially for women with dense breasts. To address these challenges, a promising approach involves combining cost-effective and accessible ultrasound imaging with economical hardware and software. Among these technologies, Doppler imaging plays a crucial role in the clinical evaluation of breast abnormalities, as intratumoural blood flow has been shown to correlate with aggressiveness and histological grade of tumours. We have developed a novel, portable, and patient-dedicated 3D automated breast ultrasound (ABUS) system for point-of-care breast cancer supplemental screening. Our proposed system can aid in the early detection of breast cancer in women with dense breasts. Additionally, it offers the advantage of incorporating Doppler imaging for the assessment of blood flow within suspicious lesions, a capability not commonly available with commercial ABUS systems. By leveraging Doppler imaging in conjunction with 3D B-mode ABUS, this innovative approach could improve breast cancer-related health outcomes, especially for at-risk populations.

## Keyword-1

three-dimensional ultrasound

## Keyword-2

breast cancer

## Keyword-3

Doppler ultrasound

**Author:** AZIZ, Amal (Western University)

**Co-authors:** ABDUL RAHMAN, Rayhan Mohammed (University of Western Ontario); PARK, Claire (Harvard Medical School); TRUMPOUR, Tiana; BAX, Jeffrey (The University of Western Ontario); GARDI, Lori (Robarts Research Institute, London, ON); TESSIER, David; BARKER, Kevin (Robarts Research Institute); POEPPING, Tamie (Western University); Dr FENSTER, Aaron (The University of Western Ontarion)

**Presenter:** AZIZ, Amal (Western University)

**Session Classification:** (DPMB/DAPI) W1-6 Medical Imaging I | Imagerie médicale I (DPMB/DPAE)


**Track Classification:** Technical Sessions / Sessions techniques: Physics in Medicine and Biology / Physique en médecine et en biologie (DPMB-DPMB)