Axillary Region Numerical Models Repository for Electromagnetic Applications

This repository includes 10 numerical models of axillary regions of 5 patients obtained from breast Magnetic Resonance Imaging (MRI) scans. The purpose of this repository is to provide models to the research community, which can be used for the development and/or validation of new electromagnetic systems for diagnosis or treatment of axillary region or other diseases in the torso, including the diagnosis of Axillary Lymph Nodes (ALNs).

1. Repository Structure

Each axillary region model includes a maximum of 6 tissue types: adipose tissue, muscle and fibroglandular tissue, skin, lung, healthy ALNs and metastasised ALNs.

2. Compatibility

All files are provided in MAT, RAW and STL formats. The files were created with the original resolution of the MRI scans. Post-processing steps such as interpolation or smoothing filters might be needed to fit the electromagnetic simulation software requirements. The STL files were not validated for 3D-printing. Two additional files for adipose and skin without cavities are provided in STL format to allow the user to combine post-processing STL files.

3. MRI acquisition

- 3.0T clinical system (Magnetom Vida, Siemens Healthineers)
- This study was approved by the Scientific and Ethical Commission of Hospital da Luz Lisboa under the references CES/44/2019/ME and CES/34/2020/ME.

4. Cite Us

If you use some of these models, please cite us with:

Godinho, DM, Felício, JM, Castela, T, et al. Development of MRI-based axillary numerical models and estimation of axillary lymph node dielectric properties for microwave imaging. Med Phys. 2021; 48: 5974–5990. https://doi.org/10.1002/mp.15143