

Biomedical Imaging with Atomic Magnetometers: Progress and perspectives

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Building on recent demonstrations [1], electromagnetic induction imaging with atomic magnetometers has paved the path to a novel approach to biomedical imaging, with the promise of non-invasive and safe *in vivo* mapping of organs' and tissues' dielectric properties. This technique is expected to have a tremendous impact in research and clinical practice when electric conductivity plays – or is predicted to play – a relevant role [2]. Today, this field, actively investigated by various groups worldwide, is at the edge of a major breakthrough: the requirements for imaging biological tissues are met [3], and the first biomedical images appear to be close to realisation.

In this talk, the most recent progress in imaging with atomic magnetometers will be reviewed. The enabling features for biomedical imaging will be treated in detail. Sensitivity of the atomic magnetometers, extension to low-conductivity range, phase and imaging stability, sensitivity to spatial features and resolution, operational configurations, as well as perspectives for full 3D mapping and image reconstruction will be discussed [3-8].

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