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γ-MRI: new imaging technology with hyperpolarised radiotracers

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Our project is devoted to a new medical imaging modality based on a revolutionary technology combining the sensitivity of γ detection and the spatial resolution and flexibility of MRI. This modality, the so-called γ-MRI, goes beyond the present technological paradigms in molecular imaging. It is not just a hybrid approach joining two separate modalities into one complex machine (like for PET-MRI machines), but a single new modality, simultaneously achieving the high spatial resolution of MRI and the high-sensitivity of SPECT in faster scan times.

The key innovation in this new approach is the hyperpolarization of radio-elements with lasers. Since this process does not require ultra-high MRI magnetic fields or fast coincidence detection of gamma rays as in PET, γ-MRI can be performed using machines that are less complex and less expensive than the present state-of-the-art devices, especially hybrid ones. This disruptive approach of a more accurate and widely available molecular imaging technology will open new avenues for patient care and for the medical imaging market.

In this contribution I will talk about the principles of γ-MRI, our results so far and about the plans for the coming months.

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