

Irregular Wideband Array: a proposal for a radio astronomical and biomedical imaging interferometer

I present a Future and Emerging Technology (FET) proposal for a microwave interferometer for biomedical and astronomical imaging, coordinated by Chalmers university. The main novelty of the proposal will be to use irregular arrays of ultra wideband (UWB) elements for both biomedical imaging and radio astronomy. For radio astronomy the UWB technology will enable the pursuit of a new paradigm in interferometric imaging, namely time-domain imaging rather than the traditional frequency-domain based imaging; while in biomedicine, the UWB will allow faster and better medium characterization. The advantage in the radio astronomical scenario is that our proposal will allow unprecedented temporal resolution of transient sources, while in the biomedical scenario, our proposal is portable (can be put in an ambulance) and is not based on ionizing radiation. Furthermore, we expect that the combination of these two fields will lead to a fruitful cross-fertilization of imaging expertise and ideas.