



**PRESS RELEASE**

## **New algorithm for high-resolution ultrasound imaging** **Recent publication of the CRS4 in a scientific journal of international importance**

*Cagliari, September 11th 2020*

**CRS4 researchers Daniela Theis and Ernesto Bonomi**, both experts in mathematical and numerical methods so far used for subsurface imaging in seismic prospecting, had the idea to apply **unconventional algorithms to the biomedical field**. The intuition, validated with experimental tests, proved to be successful and was published in the prestigious scientific journal *“Physical Review Applied”*.

**The publication concerns a new algorithm that considerably improves the resolution of ultrasound images**, thanks to a more complex mathematical model that is **closer to physical reality** than those implemented so far in ultrasound systems. More precisely, we are talking about an undulatory description of the physical phenomenon instead of a simplified geometric approach based on the ray theory.

This idea perfectly matches with the technological transition that will occur in the **next generation of ultrasound systems**, which will become **real computers capable** of running algorithms with increasing computational complexity, providing ultrasound results by far closer to what you would see with the naked eye.

“The obtained **results which are relevant from the scientific and technological point of view** - underlines the CRS4’s Sole Administrator, prof. **Giacomo Cao** - demonstrate, from one side, the well known capabilities of the Centre’s researchers and, from the other one, their ability to successfully identify unconventional applications of their skills, thus providing a suitable feedback of the investments from the Region of Sardinia **in sectors of significant interest to citizens”**.

Link to the article: <https://journals.aps.org/prapplied/abstract/10.1103/PhysRevApplied.14.034020>

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