

ACOUSTICS2008/1246 ANAIS : An ultrasound mammograph

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It is well established that ultrasonography is a cost-effective, patient-friendly imaging modality available for breast imaging. The main aim of this paper is concerned with a tomographic ultrasound mammograph allowing 3D-reconstruction of the uncompressed breast immersed in a water tank. The scanner, based on a 1024 semi-circular motorized antenna, provides more efficient way to view anatomical ductal structures of the breast. Quantitative volume parameter cartography is the unique means to make objective, reproducible and operator-independent diagnoses (Computer Aided Diagnosis). The recovery of quantitative acoustical parameters requires solving a non-linear inverse scattering problem from large amount of measurements. This is achieved using advanced computing resources; a front-end acquisition system based on 32*1024 multiplexed channels and specific reconstruction procedures. The objective is not only to offer a multiparameter tissue characterization using reflection and transmission measurements but also to provide a systemic inspection of the ductal tree.