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Fetal Magnetocardiography with an Atomic Magnetometer Array

MICHAEL BULATOWICZ, ZACK DELAND, LENA ZHIVUN, ALEC HRYCIUK, RON WAKAI, THAD WALKER, University of Wisconsin - Madison — We present the results of fetal magnetocardiography utilizing an array of four atomic magnetometers with simultaneous two-vector-component detection of magnetic fields resulting from a fetal heartbeat. Each magnetometer in the array contains an individual cell with 87Rb and buffer gas, operated in a SERF regime using orthogonal pump and probe beams, combined with parametric modulation along the pump beam for simultaneous two-vector-component detection of magnetic fields with a noise floor around 5 fT/rtHz . This work is supported by the National Institutes of Health.

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