

Comparison and Transformation of Multichannel MCG Signals Recoded with Different Pickup Coil Configurations

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We measured MCG signals using different type of pickup coils, and transformed MCG data between the coil systems. From the measurement data using one type of pickup coil, we used the Minimum Norm Estimation(MNE) method to transform into other MCG data of other pickup coil structures. After calculating the current distribution for MCG signals measured with one system, the field distribution and waveforms of the other system are reconstructed in a simple forward calculation. The reconstructed field distribution and waveforms were compared to the real measured ones. For this study, the MCG signals were recorded from the same subject using the 3 different multi-channel magnetocardiogram (MCG) systems; 1 magnetometer type and 2 planar gradiometer types. The magnetometer type is a 61-channel magnetometer system measuring vertical component of MCG fields. The planar gradiometer systems are a 64-channel first-order planar gradiometer system with a baseline of 4 cm, and a 64-channel second-order planar gradiometer system with a baseline of 3.5 cm. The planar gradiometer systems are measuring field components tangential to the chest surface.

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