Rotational invariant representation of magnetotelluric results from SW-Pannonian Basin

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An independent set of seven real-valued rotational invariants together with a characteristic (e.g. the measuring) direction provides just a sufficient number of parameters for the full reconstruction of the original impedance tensor. Thus a suitable rotational invariant representation preserves all information.

After the classical interpretation of a 140 km long magnetotelluric profile (coinciding with the Hungarian section of the CELEBRATION-007 deep refraction profile between Szentgotthárd and Barcs), we carried out detailed experiments with various rotational invariants. The results with the WAL-invariants confirm that (1) for a quick-look imaging all the real-tensor based invariants (I1, I3 and I5) are more informative than the imaginary-tensor based ones (I2, I4 and I6), (2) all information are needed for a correct interpretation. For example, the best depth-parameter is provided by I2. Results of a 3D magnetotelluric survey from and adjacent region (Nagyatád) are also shown, illustrating the 3D features of the rotational invariant representation.

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