

Title (en)
METHOD AND SIGNAL-TRANSMITTING ARRANGEMENT FOR CARRYING OUT SIGNAL DETECTION BY MEANS OF MAGNETIC PARTICLE IMAGING

Title (de)
VERFAHREN UND SIGNALÜBERTRAGUNGSANORDNUNG ZUR DURCHFÜHRUNG EINER MAGNETIC-PARTICLE-IMAGING-SIGNALERFASSUNG

Title (fr)
PROCÉDÉ ET DISPOSITIF DE TRANSMISSION DE SIGNAUX POUR LA MISE EN OEUVRE D'UNE DÉTECTION DU SIGNAL D'IMAGERIE A PARTICULES MAGNÉTIQUES

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Abstract (en)
[origin: WO2020187764A1] The invention relates to a method for carrying out signal detection by means of magnetic particle imaging, in which method magnetic/magnetisable particles (4), arranged in the field-free region of a location-dependent magnetic field, in particular a gradient magnetic field, are magnetised by means of an excitation magnetic field that changes over time, and the harmonics (9, 15), generated by the particles (4), of the frequency of the excitation magnetic field are detected as a signal from the magnetic particles (4) by means of a receiver coil arrangement (1) which in particular surrounds the particles (4), wherein a signal-transmitting arrangement, which has an outer coil (10) and at least one inner coil (11; 16, 17) connected in series to said outer coil, is positioned within the receiver coil arrangement (1) around the particles (4), wherein the signal received from the particles (4) by the at least one inner coil (11; 16, 17) is transmitted to the outer coil (10) by current flow and is re-emitted by said outer coil, in particular as a result of which the signal (S) received directly from the particles (4) and the signal (S) received from the particles (4) indirectly by the outer coil (10) are superimposed at the receiver coil arrangement (1). The invention also relates to a signal-transmitting arrangement for a magnetic-particle-imaging scanner/spectrometer, comprising an outer coil (10) which in particular has a smaller diameter than the sample-receiving channel (2) of the scanner/spectrometer, and comprising at least one inner coil (11; 16, 17) which is arranged in the outer coil (10), preferably arranged coaxially therein, and in particular has greater diameter than a sample to be examined, wherein the outer coil (10) and the inner coil (11; 16, 17) are electrically connected in series. The invention also relates to a system comprising a magnetic-particle-imaging scanner and a signal-transmitting arrangement.

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