

Development of dedicated MRI coils

Magnetic Resonance Imaging (MRI) has become the gold standard for modern medicine. Vascular diseases, degenerative processes or autoimmune pathologies are diagnosed by MRI.

Although the magnetic field of the gantry has been increased in the scanners from 1.5T up to 7T and the brands have developed new sequences to characterize different tissues, reduce patient movement, etc. no such effort has been done with the development of the primary detector for the MRI: the coils.

Following a program to seek the appropriate coil for each pathology we have developed some new coils eg. for skin diseases, ocular tumors, ictus and cervical whiplash.

Small but dedicated coils can be very useful for diagnostics. As an example we will show how a small 4 channel coil can detect ocular tumors that commercial coils can not detect.

In a real scenario, severe cistoc patient present huge problems into a MR gantry and in most cases, MR studies can not be performed on them. To overcome this problem a high resolution orientable-32 channel coil for a 3T scanner was designed and characterized for MR-spectroscopic studies.

A complete analysis of the state of carotides is crucial to evaluate and prescribe the treatment for ictus patients. Developed under a joint project with vascular surgeons and neuro-radiologists a vascular 18-channel to characterized carotid-wall high resolution will be presented.

Biopsy is a prerequisite to evaluate skin tumors as melanoma before surgery. Although skin-ecography has been included as a new modality to evaluate skin, MRI and IV-contrast MRI can offer new insights to plan the therapeutic route. A disposable 7-channel skin coil and signal to noise ratio maps will be shown.

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