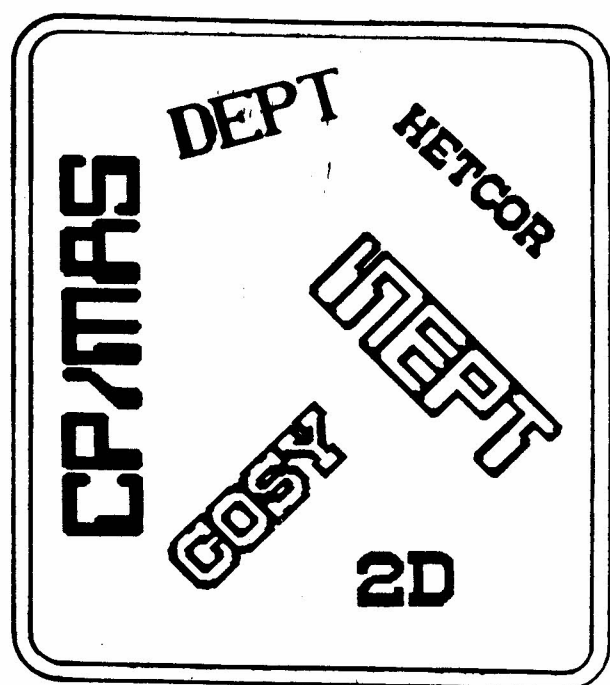


RESSONÂNCIA MAGNÉTICA NUCLEAR



II ENCONTRO DE USUÁRIOS

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RESUMOS

MRI AT ULTRA LOW FIELD

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It is known that the sensibility of a NMR experiment increases with magnetic field. This is not true for other parameters related to NMR in biological systems such as the relative contrast in T1 and T2 between different tissues. At fields of the order of 0.1 Tesla both T1 and T2 for biological tissues tend to increase and become gradually independent of the nature of the tissue. At low fields that values are smaller and more strongly tissue dependent. One can profit of that property when using low magnetic fields, because the lack in sensitivity is compensated by the high contrast between tissues and more averages can be made in the same acquisition time because T1 is smaller allowing shorter TR.

Not to be neglected is the possibility to link "in vivo" spectroscopy and imaging techniques, only possible at high fields (> 1.5 Tesla).

We are able to exploit these two possibilities of Magnetic Resonance Imaging in our laboratory at IFQSC/USP, where we developed two prototypes of MRI systems: the first, operating at 2.0 Tesla, is described in (1); the other is a ultra-low field whole body NMR tomograph operating at 0.05 Tesla. It is based on a Hitachi resistive magnet (four coils) shimmed mechanically by positioning the coils. All the electronics related to RF coils (head, body, surface), tuning, transmission and reception of RF signal are being developed locally, as is the electronic related to image processing. The main results will be presented, as images obtained, in poster form.

- (1) A. Tannús - "Desenvolvimento da tecnologia de tomografia por Ressonância Magnética Nuclear - TORM" - PhD Thesis, IFQSC/USP, 1987.

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