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Direct measurements of the magnetic field inside the magnetospheric plasma RT-1 YOSHIHISA YANO, ZENSHO YOSHIDA, JUNJI MORIKAWA, HARUHIKO SAITOH, TATSUNORI MIZUSHIMA, Graduate School of Frontier Sciences, University of Tokyo — The magnetospheric plasma experiment RT-1 (Ring trap -1) has achieved stable confinement of high-beta plasma produced by electron cyclotron resonance heating (ECH). The observed diamagnetic signals ($\sim$3mWb) correspond to the maximum local beta values exceeding 40%, according to the MHD equilibrium analysis. (Soft X-ray measurements confirmed the existence of high energy electrons of Te $\sim$ 10 keV, which is consistent to the estimated plasma pressure.) As a diagnostic of internal profile of the plasma pressure, we developed a multi-channel magnetic probe system and carried out direct measurement of the diamagnetic signals inside the plasma. We found that the pressure profile peaks steeply near the ECH resonance surface and has dependence on the fueling gas pressure.

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