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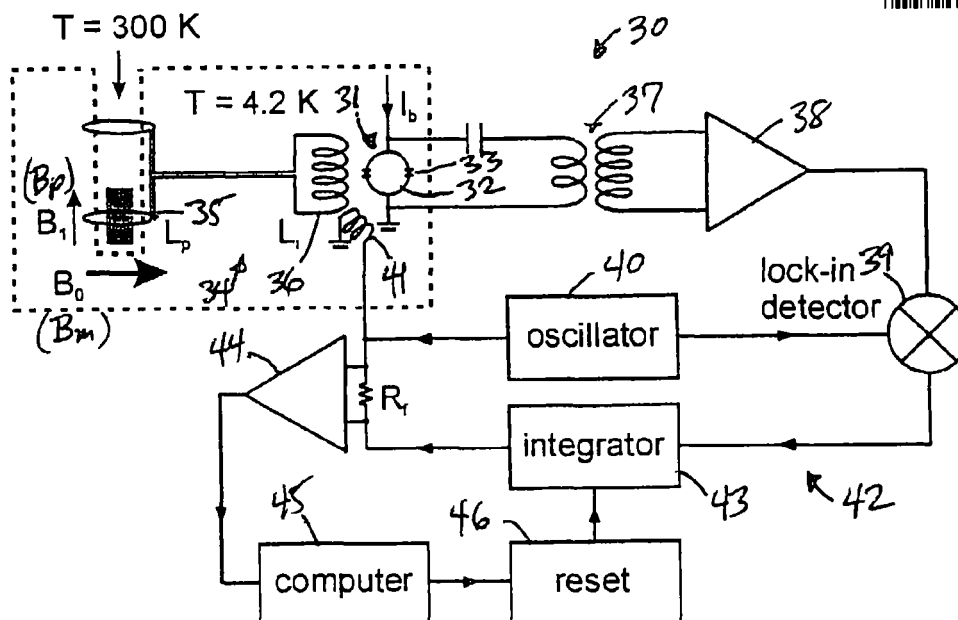
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60/355,577 6 February 2002 (06.02.2002) US(71) Applicant: **THE REGENTS OF THE UNIVERSITY OF CALIFORNIA** [US/US]; 1111 Franklin Street, 12th floor, Oakland, CA 94607 (US).(72) Inventors: **CLARKE, John**; 657 Cragmont Ave., Berkeley, CA 94708 (US). **MCDERMOTT, Robert**; 2425 Fulton St. #8, Berkeley, CA 94704 (US). **PINES, Alexander**; 710 Keeler Avenue, Berkeley, CA 94708 (US). **TRABESINGER, Andreas, Heinz**; Univeritaestrasse 55, CH-8006 Zurich (CH).(74) Agent: **SARTORIO, Henry, P.**; Lawrence Berkeley National Laboratory, Patent Department, One Cyclotron Road, MS 90B0104, Berkeley, CA 94720 (US).(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW.(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).Published:
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(54) Title: SQUID DETECTED NMR AND MRI AT ULTRALOW FIELDS



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(57) Abstract: Nuclear magnetic resonance signals are detected in microtesla fields. Prepolarization in millitesla fields is followed by detection with an untuned dc superconducting quantum interference device "SQUID" (31) magnetometer. Because the sensitivity of the SQUID is frequency independent, both signal-to-noise ratio "SNR" and spectral resolution are enhanced by detecting the NMR signal in extremely low magnetic fields, where the NMR lines become very narrow even for grossly inhomogeneous measurement fields.

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