CLM-LM 8/73

GARCHING: LIBRARY AND DOCUMENTATION UNIT

(Note of visit by J L Hall in September 1973)

October 1973

Visit to The Institut fur Plasmaphysik, Garching,

Library and Documentation Unit

1. INTRODUCTION

A visit (by JLH) was made to Garching on 19-20 September 1973, primarily to discuss various policy matters connected with the provision of European fusion translation services, comprehensive printed indexes covering the fusion field, and other documentation matters including an exchange of views on "service levels" and budgets etc.

The opportunity was taken to make brief visits to the Main Library, a Divisional Library, and to the Documentation Unit, and the purpose of this note is to set down brief details of these units as observed at the time of visit.

2. GARCHING - GENERAL

Garching is situated some 11 miles NNE of Munich. The site is a compact one as can be seen from the plan (Fig.1). Details of the IPP Divisional structure, staffing, budget etc. are given in "Jahresbericht 1972" (pp.256 et seq.). Both the Library and the Documentation Unit are part of Theory Division (Division Head, Prof Dr D Pfirsch). In addition to the Main Library there are small libraries in each of the 9 divisions on site. The IPP telephone number is München 0811/38311 and the Telex number is 5/24637.

3. MAIN LIBRARY

Accommodation - some 8,200 sq.ft. is available. Bearing in mind that Garching is a larger establishment than Culham this seems a reasonable space allocation allowing for some expansion in the future. A plan of the Library is attached (Fig.2). The Library building itself is fairly new, the Library having outgrown its former accommodation of some 3,600 sq.ft.

Staff

Fr Dr Liselott Johannsen	Ext.9182	Librarian
Fr Roswitha Maly-Motta	Ext.9183	Secretary
Fr Olga Kompus	Ext.9189	Reading Room
Frl Eva Rudolf	Ext.9184	Orders, "approvals"
Fr Ruth Lengyel	Ext.9186	) Outside Loans,
Fr Helga Toffolo	Ext.9186	) Garching) publications
Fr Luise Baran	Ext.9190	Reports Library

Stock

Books - some 8,000 to 10,000 are held in the Main Library (although the total number of books held on site including those held in Divisional Libraries is over 16,000). Books are shelved according to a simple scheme (sample page attached, Fig.3, full copy held by Culham Librarian); since this scheme, devised a number of years ago, contains only some 100 allowed "slots" there are obvious difficulties arising now that the collection is so much larger than in past years.

Journals - over 8,000 volumes are held. These are filed alphabetically by main title. A complete "holdings list" is available (sample page, Fig.4).

Reports - about 21,000 reports are held, filed numerically by an accession number allocated by Garching.

Loans - not much material is loaned from the Main Library stock which is largely a reference library; loan requirements are largely satisfied via the Divisional collections.

Indexes

Books. There are some 9,000 author cards the rule apparently being to file only by name of first author. The subject card collection is slightly larger at about 11,000 entries; the subject index is based exactly on the above-mentioned shelving scheme and many sections of the index show the same "bulk" problems as do the books on the shelves. There are small separate card indexes for (i) journals by title, (ii)

bibliographies, (iii) conferences by principal keyword, (iv) conferences by place, (v) conferences by date.

Journals. There are no special indexes to journal articles, reliance being entirely on the various printed indexes available.

Reports. There are some 21,000 author cards, filing being apparently by first author only. There are also some 21,000 corporate author cards, these cards being filed in two separate sequences - non-US (about 10,000 cards) and US (about 11,000 cards). There are also small separate card indexes for (i) theses by author, and (ii) patents by country.

Publications. The Library produces fortnightly a "New Books" title list, sample page attached (Fig.5). The Library also issues a "Quarterly Title List" (with abstracts) of publications by Garching staff, and an annual list of Garching "Laboratory Reports and Publications" (without abstracts).

4. DOCUMENTATION UNIT

The aims of the Documentation Unit are the selection of material of interest to Garching staff, the preparation of printed indexes based on this material, and the operation of a computer batch searching service on a request basis.

Staff. The Documentation Unit is in the charge of one of the scientists in Theory Division, Dr Karl-Ulrich von Hagenow (Ext.355). Dr von Hagenow spends only a small proportion of his time on documentation matters and the bulk of the work of the Documentation Unit is handled by

Fr Martha Mueller-Verweyen (Ext.9178)
Fr Charlotte Marquardt (Ext.9178)
plus one IBM 026 punch operator

All these staff are in offices close to the Main Library. Mrs Mueller is very well versed in the day-to-day running of the Documentation Unit, and in the running of the computer programs, having worked on the production of the "Plasma Physics Index" from its inception 8 years ago.

Input. Material is selected from the Main Library collection, scanned and key-worded by scientists on site, original documents being returned to the Main Library within 5-15 days. Details on the work-sheets are key-punched, various proof and correction computer runs are made, and the final line-printer output is then finally vetted by one of the Theory Division Scientific staff and also checked for any translation points arising. Currently the output is upper case only, but there is a possibility that upper case/lower case will be introduced sometime during 1974. The master copy is then sent to ZAED for printing. The Plasma Physics Index is under the direct control of the Documentation Unit; however, the Technology Index is prepared within Technology Division and is only handled by the Documentation Unit from the time of key-punching onwards.

Printed output. The principal printed outputs of the Documentation Unit are the monthly Index volumes mentioned above; a sample page from the bibliographic listing in the Plasma Physics Index is shown in Fig.6; each issue is equipped with an author index (see Fig.7), a subject index for that issue (Fig.8) and a cumulative (for each year) "Subject Index in Logical Order" allowing manual co-ordinate searches to be made (Fig.9).
The monthly index volumes necessarily take some time to prepare, and to speed up current awareness a list of "quick titles" from the leading six or seven plasma physics journals is circulated rapidly to all scientists on site (sample page shown in Fig.10). There is no SDI service, nor does there

seem to be much desire for one.

Retrospective Searches. Searches can be carried out manually using the printed indexes mentioned above, or in batch mode as required on the Garching IBM 360/195. There is a reasonable demand for computer batch searching - in a recent six month period the Documentation Unit ran about 40 searches, the output of "found" references varying from 3 references to over 1,000 references. Computer time used was said to be about 1 minute or less per search. Normal Boolean AND/OR/NOT search is used, searching being straightforward sequential. In formulating a search profile, use is made of frequency statistics, e.g. a page of the 1970 statistics for the Plasma Physics Index is attached (Fig. 11, full copy held by Culham Librarian).

A sample search was carried out during the visit (there was some delay in the carrying out of this search during the visit, but under optimum conditions search results are apparently available within about 30 minutes of search demand). The search was for references meeting the statement

("DRIFT INSTABILITIES" OR "DRIFT WAVES") & ("TOROIDAL GEOMETRY" OR "TOROIDAL EQUILIBRIUM")

Sample output is shown in Fig.12; the search produced 14 "found" references as follows, from 1,132 titles tested and 35,586 titles scanned.

Year	No. found	Bibliographic Number
1967	Nil	
1968	2	3558, 4832
1969	2	4632, 5484
1970	3	1993, 3957, 5914
1971	2	3965, 5170
1972	2	4947, 5425
1973	3	1731, 1946, 2942

Size of Data Bases (document titles)

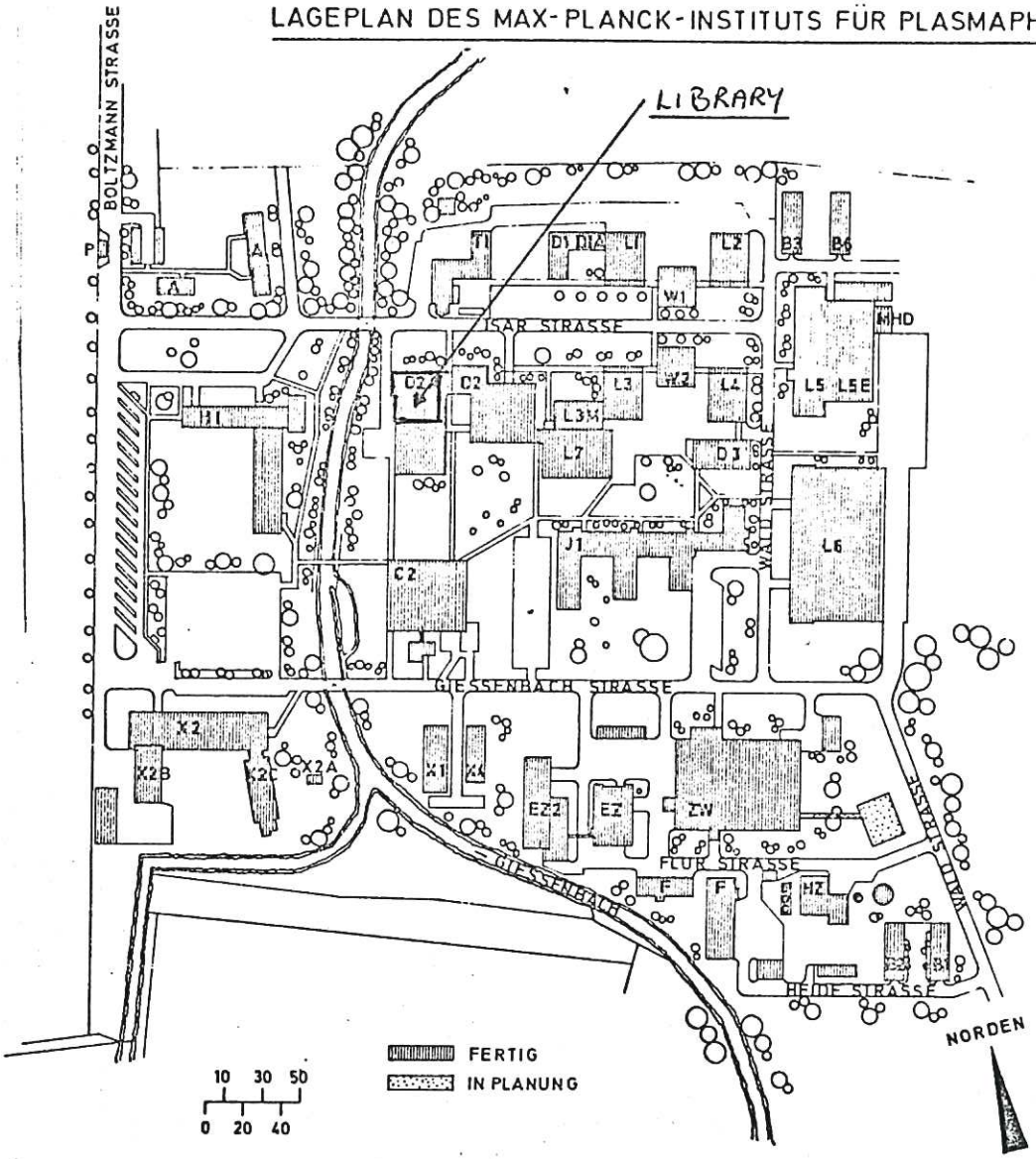
	end-1972	September 1973
Plasma Physics Index	32,401	35,586
Technology Index	12,445	~14,700
Surface and Vacuum Physics Index	13,845	~15,600

Gaps in Coverage: Garching and Culham. From figures available, comparing (i) subscription lists and (ii) the "scanning lists" for both Plasma Physics Index and Technology Index, it is clear that both Garching and Culham cover a common "core" of journals and that each site covers a separate "set" of journals relevant to its own particular interests. The existence of peripheral "sets" is only to be expected but their size is surprisingly large:

No. of Journal Titles Scanned		
Culham Unique	Common	Garching Unique
~ 143	~ 135	~ 145

J L Hall
October 1973

LAGEPLAN DES MAX-PLANCK-INSTITUTS FÜR PLASMAPHYSIK



P	Pforte
A	Dienstwohnungen - Gästewohnungen
T1 - D1 - D1A - L1 - W1 - L2	Experimentelle Plasmaphysik 1
L3 - L3M - L7 - W2 (Teil) - D3	Experimentelle Plasmaphysik 2
L6 (Teil)	Experimentelle Plasmaphysik 3
L5 - L5E - MHD	Experimentelle Plasmaphysik 4
L6 (Teil)	Relativistische Plasmen
D2 - D2A (Teil)	Abteilung Theorie
D2A (Teil)	Abteilung Informatik
L4 - W2 (Teil) - B3	Abteilung Oberflächenphysik
I1 - L6 (Teil)	Abteilung Technik
ZW	Zentralwerkstatt - Zentrallager
EZ - EZ 2	Energiezentralen
H1	Geschäftsführung
	Verwaltung und Allgemeine Dienste
B1 - B2	Hausverwaltung
B6	Gerätepool
C2	Kantine
X1 - X4	Max-Planck-Institut für Physik und Astrophysik (Institut für Extraterrestrische Physik)

Abb.6

Fig.1 Plan of Garching Site

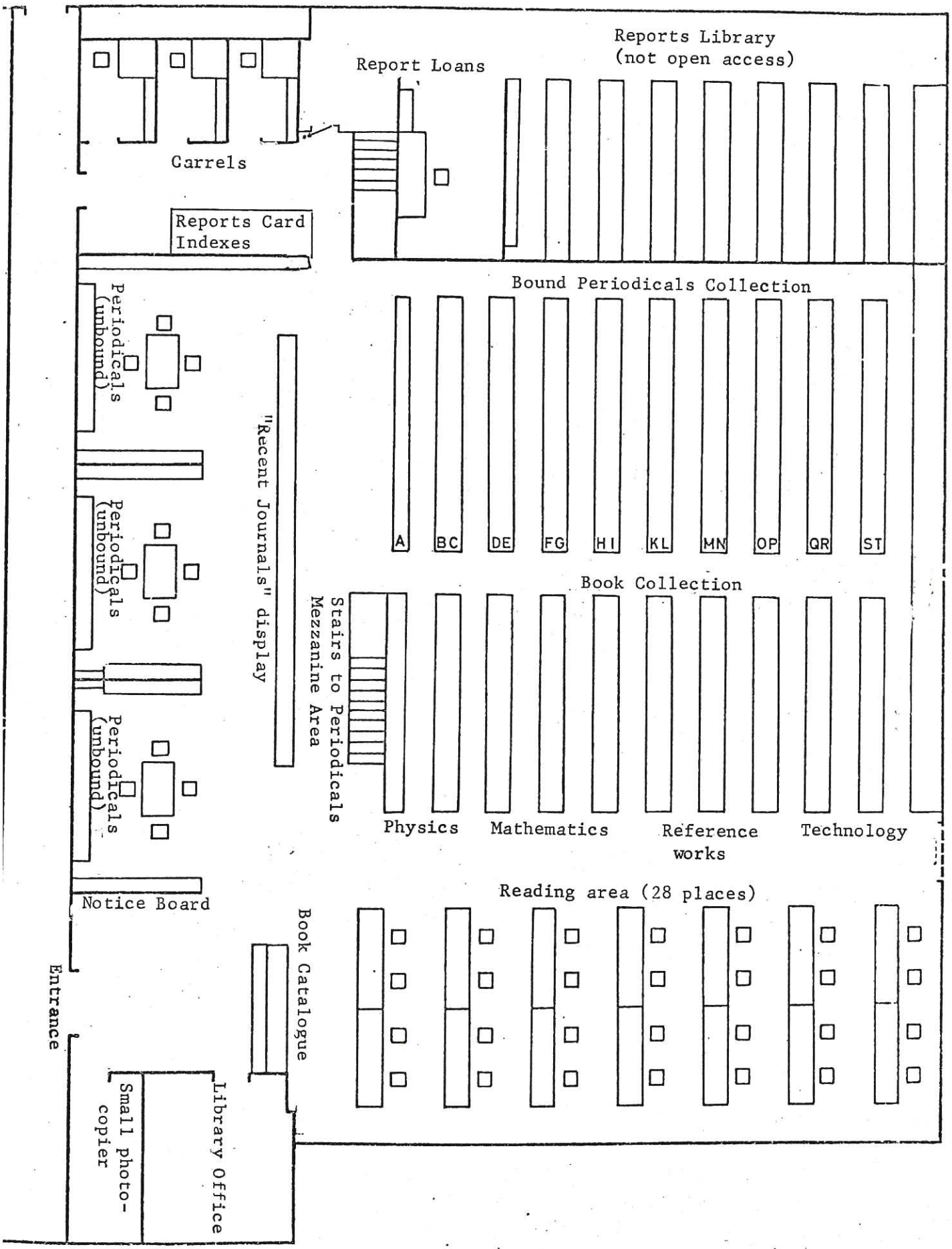


Fig.2 Garching Main Library

N - Naturwissenschaften

Na - Strahlenschutz

Nb - Biologie - Biophysik

Nc - Chemie

Nd - Physikalische Chemie

Ne - Landolt-Börnstein

Nf - Thermophysical Properties of Matter

Ng - Umweltschutz - Lärmschutz

P - Physik

Pa - Grundlagen der Physik - Geschichtliches

Pb - Handbücher - Lexika der Physik

Pc - Lehrbücher (zusammenfassend)

Pd - Mechanik- technische Mechanik

Pe - Kontinuumsmechanik - Akustik

Pf - Thermodynamik - Statistische Mechanik - Kinetische Theorie

Pg - Elektrodynamik

Ph - Optik - Optische Instrumente - Laser

Pi - Relativitätstheorie - Gravitation - Kosmologie

Pj - Quantenfeldtheorie - Elementarteilchen

Pk - Quantentheorie

Pl - Atom- und Molekülphysik - Spektren

Pm - Kernphysik

Pn - Aufbau der Materie - Flüssigkeiten - Festkörper

Po - Plasmaphysik

Po (E) - Elementarprozesse im Plasma

Po (T) - Plasma-Tagungen und -Sommerschulen

Pp - Astrophysik - Astronomie - Geophysik - Astronautik

Pq - Vakuumphysik - Vakuumtechnik - Oberflächen - Dünne Schichten

Pr - Tieftemperaturphysik - -technik - Supraleitung

Ps - Elektronen- und Ionenoptik - Massenspektroskopie - Beschleuniger

Px - Meßmethoden - Maßsysteme

Py - Physikalische Tabellen und Formelsammlungen

Pz - Physikalische Festschriften - Tagungen

Fig.3 Example of shelving/classification scheme

Standort	T i t e l	Band/Jahr
Regal 1	Abhandlungen d. Akad.d.Wiss. in Göttingen. Math.-Phys. Klasse	1-16 (1897-1931)
Abt.Informatik	Acta Informatica. Berlin	1 (1971) ff.
Regal 1	Acta Physica Polonica. Warszawa	1-36 (1932-1969)
1	Acta Physica Polonica (A). Warszawa	37 (197o) ff.
1	Acta Physica Polonica (B). Warszawa	1 (197o) ff.
1	Advanced Energy Conversion. Oxford (später: Energy Conversion)	1-7 (1961-1967)
Pe 8	Advances in Applied Mechanics. New York	1 (1948) ff. (L.)
Pe 1	Advances in Applied Mechanics/Supplement New York	1 (1961) ff.
Pp 92	Advances in Astronomy & Astrophysics. New York	1 (1962) ff.
Pl 43	Advances in Atomic & Molecular Physics. New York	1 (1965) ff.
Regal 1	Advances in Catalysis & Related Subjects. New York	1-2o (1948-1969)
Nc 25	Advances in Chromatography. New York	1 (1965) ff.
Mn I 59	Advances in Computers. New York	1 (196o) ff.
Pr 11	Advances in Cryogenic Engineering. New York	5 (1959) ff.
Regal 1	Advances in Electronic & Electron Physics. New York (bis 1953: Advances in Electronics)	1 (1948) ff.
1	Advances in Electronic & Electron Physics/Supplement. New York	1 (1963) ff.
Pe 9o	Advances in Heat Transfer. New York	1 (1964) ff.
Pn 95	Advances in High Pressure Research. New York	1 (1966) ff.
Ps 3	Advances in Mass Spectrometry. London	1 (1958) ff.
Tc 44	Advances in Microwaves. New York	1 (1966) ff.
Pm 158	Advances in Nuclear Science and Technology. New York	1 (1962) ff.
egal 1	Advances in Physics. London	1 (1952) ff.
Po 235	Advances in Plasma Physics. New York	1 (1968) ff.
Ml I 92	Advances in Probability & Related Topics. New York	1 (197o) ff.
Pc 35	Advances in Theoretical Physics. New York	1 (1965) ff.
egal 1	AEG-Mitteilungen. Berlin	52-57 (1962-1967)

Fig.4 Sample page from Library's "Holdings List" of Journals, Periodicals.

den 13.9.1973

NEUERWERBUNGEN VON BÜCHERN IN DER HAUPTBIBLIOTHEK

M a t h e m a t i k

Kogbetliantz, E.G.
Fundamentals of Mathematics from an Advanced Viewpoint. Algebra and Analysis: Evolution of the Number Concept and Determinants - Equations - Logarithms. Vol. I and II. (= 1 Buch).
New York, N.Y.: Gordon and Breach 1968. — Mb I 37

Noble, B.
Numerisches Rechnen II. Differenzen, Integration und Differentialgleichungen.
Mannheim: Bibliograph. Inst. 1973. — Mk I 36

Young, D.M. / Gregory, R.T.
A Survey of Numerical Mathematics Vol. II.
Reading, Mass.: Addison-Wesley 1973. — Mk I 75

Martin, H.C. / Carey, G.F.
Introduction to Finite Element Analysis. Theory and Application.
New York, N.Y.: McGraw-Hill 1973. — Mk II 17

Byrne, G.D. / Hall, C.A. (ed.)
Numerical Solution of Systems of Nonlinear Algebraic Equations. Papers presented at the NSF-CBMS Regional Conference on the Numerical Solution of Nonlinear Algebraic Systems with Applications to Problems in Physics, Engineering and Economics, held at the University of Pittsburgh, July 10-14, 1972.
New York, N.Y.: Academic Pr. 1973. — Mk III 82

Collatz, L. / Wetterling, W. (Hrsg.)
Numerische Methoden bei Optimierungsaufgaben. Vortragsauszüge der Tagung über numerische Methoden bei Optimierungsaufgaben vom 14-20 November 1971 im Mathematischen Forschungsinstitut Oberwolfach (Schwarzwald).
Basel: Birkhäuser Verl. 1973. — Mm 56

Fig.5 "New Books" Title List (Fortnightly)

FROM: PLASMA PHYSICS INDEX, VOL.8, NO.7, JULY 1973

3119
STUDY OF THE AMPLITUDE OF AN ELECTROMAGNETIC WAVE REFLECTED FROM THE BOUNDARY OF AN ANISOTROPIC PLASMA
ADAMOV I.YU.
BEREZHNYY V.L.
DUSHIN L.A.
LEBEDEV P.M.
KONONENKO V.I.
AEC * COPY OF AEC-TR-7368, 1972, P12423
REFLECTION OF WAVES
ELECTROMAGNETIC WAVES
BOUNDED PLASMA
AMPLIFICATION
ANISOTROPY EFFECTS
COLLISION EFFECTS
ELECTRON DENSITY CALCULATIONS
DIAGNOSTICS
NUMERICAL TREATMENT
/THEORETICAL/

3120
CALCULATION OF REFLECT.AND TRANSMISSION COEFFICIENTS FOR A CLASS OF ONE-DIMENSIONAL WAVE PROPAGATION PROBLEMS IN INHOMOGENEOUS MEDIA
BANOS A., JR
UCPLPG * PPG-124, 1972, P12458
REFLECTION OF WAVES
TRANSMISSION OF WAVES
INHOMOGENEOUS PLASMA
ONE-DIMENSIONAL PROBLEMS
BOUNDARY CONDITIONS
APPROXIMATION METHODS
/HELMHOLTZ EQUATION/
WAVE PROPAGATION
/THEORETICAL/

3121
AMPLITUDE SATURATION OF DRIFT WAVES IN A Q MACHINE
KRAYBILL D.M.
ILL-R * REP.R-574, UILU-ENG 72-2235, (AD 747852), 1972, P12459
DRIFT WAVES
Q DEVICES
NONLINEAR EFFECTS
DENSITY GRADIENT INSTABILITIES
ELECTRIC FIELD EFFECTS
COLLISIONLESS PLASMA
COLLISION EFFECTS
WAVE PARTICLE INTERACTIONS
INERTIAL EFFECTS
STABILIZING EFFECTS
LANDAU DAMPING
/EXPERIMENTAL/

3122
RODUCTION OF THERMONUCLEAR PLASMAS BY ANOMALOUS IFFUSION OF MAGNETIC FIELDS IN A HIGH VOLTAGE THETA INCH
O PERSONAL AUTHOR
MNE * ANN.SUMMARY REP., 1971, (AD 738870), P12460
971,
LOW DENSITY PLASMA
COLLISIONLESS PLASMA
MAGNETIC FIELD DIFFUSION
ANOMALOUS EFFECTS
PLASMA PRODUCTION
THERMONUCLEAR REACTIONS
THETA PINCHES
COLLISIONLESS SHOCK WAVES
HEATING OF IONS
HEATING OF ELECTRONS
PROGRESS REPORTS
INSTABILITY OF PLASMA
PLASMA TURBULENCE

23
PERIMENTAL INVESTIGATION OF THE ELECTRICAL AND ERMAL PROPERTIES OF STABILIZED ARCS (IN RUSSIAN)
NSKOI A.V.
UBNIKIN V.S.
RKHOMENKO A.S.
T * COPY OF INZHEMERNO FIZ.ZH., VOL.22/6, P12431
72, 1089-1895,
ARCS
PLASMATRONS
STABILIZING EFFECTS
ELECTRIC FIELD DISTRIBUTIONS
POTENTIAL DISTRIBUTIONS
ARGON PLASMA
/EXPERIMENTAL/

24
UADRUPOLE MASS SPECTROMETER APPARATUS FOR PLASMA GNOSTICS BASED ON THE MASSES OF CHARGED PARTICLES RUSSIAN)
EGOROV V.S.
PASTOR A.A.
PLEKHOTIN G.A.
LIT * COPY OF VESTNIK LENINGRADSK.UNIV., P12463
NO.16, 1972, 69-75,
MASS SPECTROSCOPY
DIAGNOSTICS
CHARGE EFFECTS
COMPONENTS FOR DEVICES
NEON PLASMA
ARGON PLASMA
/EXPERIMENTAL/

3125
EFFECT OF RANDOM ERRORS IN PLASMA EMISSIVITY CALCULATIONS (IN RUSSIAN)
LITVINOVA N.N.
LIT * COPY OF VESTNIK LENINGRADSK.UNIV., P12464
NO.16, 1972, 37-45,
EMISSION OF RADIATION
OPTICAL RADIATION
DIAGNOSTICS
ABEL EQUATION
STATISTICS
/THEORETICAL/

3126
LASL CONTROLLED THERMONUCLEAR RESEARCH PROGRAM FOR A 12-MONTH PERIOD ENDING OCTOBER 1971
MOTZ H.T.
LA * LA-4888-PR, 1972, P12449
PROGRESS REPORTS
THETA PINCHES
Z PINCHES
HELICAL FIELDS
LASER DIAGNOSTICS
THERMONUCLEAR DEVICES
HEATING BY SHOCK WAVES
MHD INSTABILITIES
DIFFUSION IN MAGNETIC FIELDS
MICROWAVE DIAGNOSTICS
HEATING OF ELECTRONS
MULTIPOLES
INJECTION OF PLASMA

3127
EXPERIMENTAL PLASMA STUDIES
DUNN M.G.
NASA * NASA CR-1958, 1972, P12450
DISSOCIATIVE RECOMBINATION
THREE-BODY RECOMBINATION
LANGMUIR PROBES
MICROWAVE INTERFEROMETRY
ELECTRON DENSITY MEASUREMENTS
ELECTRON TEMPERATURE MEASUREMENTS
BOUNDARY LAYERS

3128
HIGH MACH NUMBER TURBULENT MAGNETOSONIC SHOCKS
PAPADOPOULOS K.
WAGNER C.E.
HABER I.
NRL * NRL MEMO REP.2359, 1971, P12451
TURBULENT FLOW
MAGNETOACOUSTIC WAVES
SHOCK WAVES
COMPUTER SIMULATION

3129
AN INVESTIGATION OF THE TEMPERATURE DISTRIBUTION IN THE LITHIUM BLANKET OF A FUSION REACTOR
LEVERETTE S.J.
ORNL * COPY OF ORNL TM 3701, 1972, P12452
NUMERICAL TREATMENT
THERMAL CONDUCTIVITY
ENERGY DISTRIBUTIONS
REACTOR STUDIES
STRONG MAGNETIC FIELDS
COOLING SYSTEMS

3130
FREQUENCY SHIFT DUE TO TRAPPED PARTICLES
DEWAR R.L.
PRINCETON * PPL-AP50, 1971, P12453
TRAPPING OF PARTICLES
ELECTROSTATIC WAVES
DISTRIBUTION FUNCTIONS
NONLINEAR EFFECTS
DISPERSION RELATIONS
COMPUTER SIMULATION
REACTOR STUDIES
CRYOGENICS

Fig.6 Sample of Bibliographic Listing from Plasma Physics Index

AUTHOR INDEX

Fig.7 Sample of Author Index to Plasma Physics Index

SUBJECT INDEX

Fig.8 Sample of Subject Index to Plasma Physics Index

SUBJECT INDEX
IN LOGICAL ORDER

Fig.9 Sample of "Subject Index in Logical Order" to Plasma Physics Index

SUBJECT INDEX
IN LOGICAL ORDER

OBJECTS

PLASMA TYPES

AFTERGLOW
306 307 403 404 417 645 864 1104 1157 1222 1257 1741 1744 1760 1802 2092 2162 2163
2204 2293 2357 2362 2387 2568 2571 2732 2734 3044 3067

ARCS
129 141 150 151 231 254 258 260 264 269 378 393 410 505 507 508 511 512
513 528 536 539 564 632 636 652 719 720 735 760 777 794 825 852 854 855
861 866 899 911 913 938 948 955 957 981 983 984 988 997 1002 1016 1017 1048
1063 1066 1068 1085 1139 1145 1202 1203 1221 1273 1274 1278 1326 1352 1353 1381 1382 1386
1388 1422 1426 1516 1527 1534 1665 1704 1722 1753 1780 1792 1815 1875 1904 1987 2017 2025
2028 2056 2065 2068 2072 2105 2134 2138 2141 2144 2145 2153 2156 2171 2197 2198 2200 2203
2221 2258 2325 2332 2340 2351 2356 2365 2383 2384 2388 2440 2472 2473 2505 2634 2673 2736
2737 2753 2759 2766 2781 2788 2806 2807 2831 2854 2972 3004 3070 3123 3136 3147 3148 3149
3150 3156 3157 3158 3167 3177 3184

ARGON PLASMA
1 6 75 106 109 112 120 128 129 148 149 153 155 156 162 176 215 229
230 244 254 278 287 304 333 335 376 382 402 420 425 504 505 508 512 513
515 518 528 529 538 539 581 587 588 634 637 640 686 687 705 718 720 732
759 783 784 786 801 867 910 935 949 962 979 1010 1016 1024 1025 1063 1119 1120
1125 1128 1129 1143 1224 1229 1274 1276 1306 1323 1348 1354 1381 1407 1408 1423 1500 1505
1527 1556 1557 1618 1654 1722 1815 1821 1874 1999 2020 2049 2105 2135 2136 2138 2145 2157
2196 2214 2222 2227 2229 2235 2252 2258 2314 2318 2347 2363 2366 2385 2428 2448 2459 2481
2503 2546 2580 2583 2649 2673 2681 2694 2706 2731 2737 2778 2801 2854 2865 2898 2952 2957
2966 2995 3035 3054 3067 3070 3110 3123 3124 3140 3146 3153 3159 3160 3167 3169 3174

BARIUM PLASMA
115 126 484 510 828 1456 1457 1840 2821 2881 2984

BOUNDED PLASMA
241 286 330 534 557 577 584 652 753 759 779 804 940 956 960 961 1094 1360
1709 1818 1944 2142 2279 2432 2532 2634 2642 2709 2976 2977 3044 3050 3051 3064 3119 3157

CAESIUM PLASMA
215 239 258 262 615 637 787 865 892 955 957 1011 1067 1157 1171 1277 1352 1755
1975 2366 2701 2733 2735 2842 2887 2970 3034 3136 3142 3144 3145 3147 3148 3151 3157 3158
3162 3163 3164 3166 3167 3171

COLD PLASMA
30 84 98 210 245 259 269 301 302 304 306 307 350 451 554 555 575 645
751 920 955 973 1020 1052 1087 1108 1131 1199 1223 1226 1235 1250 1252 1253 1445 1522
1580 1711 1885 1960 1978 1982 2169 2199 2241 2280 2359 2370 2489 2529 2675 2738 2749 2798
2824 2837 2879 2986 3132 3133 3134 3135 3159

COLLISIONLESS PLASMA
99 105 128 242 281 293 315 349 361 406 426 439 557 574 619 627 657 658
660 694 830 839 841 846 872 903 915 975 1079 1131 1132 1169 1226 1234 1236 1250
1267 1276 1333 1392 1437 1504 1510 1525 1532 1575 1602 1614 1639 1645 1648 1659 1715 1829
1862 1948 2011 2150 2241 2359 2382 2454 2459 2627 2632 2657 2658 2677 2683 2689 2690 2721
2728 2749 2773 2796 2798 2840 2886 2893 2908 2928 2929 2931 2935 2941 2942 2970 3015 3059
3101 3103 3115 3121 3122

COMBUSTION PLASMA
272 524 947 1144 1380 1877 1986 2005 2051 2100 2414 2428 2550 2551 2552 2553 2554 2555
2556 2557 2561 2562 2563 2564 2565 2566 2567 2769 3134 3141

COSMIC PLASMA
68 200 204 214 295 296 297 299 300 301 302 360 460 461 464 621 768 770
771 1015 1033 1166 1317 1436 1467 1670 1690 1697 1718 2208 2274 2276 2416 2468 2515 2637
2950

DECAYING PLASMA
53 307 382 417 588 602 605 652 938 1157 1257 1350 1723 1877 1894 1904 2103 2200
2293 2305 2362 2387 2634 2701 2893 3142

DEUTERIUM PLASMA
216 220 305 351 503 551 606 749 766 770 893 934 986 1051 1231 1241 1242 1259
1269 1276 1285 1298 1766 1767 1928 2027 2231 2238 2242 2243 2248 2258 2267 2303 2346 2381
2388 2433 2585 2675 2767 2805 2913 2917 3040

DISCHARGES
45 58 75 76 77 126 129 138 150 152 153 190 191 224 238 261 376 378
393 411 511 515 543 568 569 579 589 597 598 599 600 688 715 726 734 737
761 771 819 825 883 890 891 893 896 922 923 955 957 962 990 992 997 1004
1063 1069 1124 1141 1159 1162 1195 1203 1204 1237 1344 1352 1354 1355 1361 1366 1391 1399
1416 1418 1423 1426 1516 1533 1559 1582 1583 1584 1588 1589 1590 1591 1592 1664 1740 1759
1770 1870 1872 1875 1876 1898 1904 1947 1966 1968 1974 1985 1987 1989 1990 1992 1999 2005
2008 2091 2094 2097 2098 2112 2131 2168 2177 2228 2280 2306 2332 2333 2336 2337 2340 2354
2356 2366 2384 2386 2423 2425 2438 2478 2500 2525 2577 2616 2635 2644 2684 2686 2692 2701
2753 2758 2759 2760 2788 2805 2836 2856 2861 3000 3009 3055 3097 3148 3149 3155 3160 3167
3177

ELECTRODELESS DISCHARGES
38 256 257 732 1412 1424 1746 1773 2135 2423 2678 2825

Fig.9 (Continued)

HYS.OF FLUIDS

OL.16/1 ...73, 45-49
NERGY AND MOMENTUM EQUATIONS FOR DISPARATE-MASS BINARY ASES
OHNSON E.A.

OL.16/1, 1973, 59-68
EASUREMENTS OF THE STRUCTURE OF AN IONIZING SHOCK WAVE N A HYDROGEN-HELIUM MIXTURE
EIBOWITZ L.P.

OL.16/1, 1973, 69-74
ONTINUUM ELECTROSTATIC PROBE THEORY WITH MAGNETIC FIELD
YOGI K.K. COHEN I.M.

OL.16/1, 1973, 75-81
AVES IN A HOT UNIAXIAL PLASMA EXCITED BY A CURRENT URCE
NGH N. GOULD R.H.

OL.16/1, 1973, 82-89
ASUREMENT OF THE ATTENUATION OF AN ELECTROMAGNETIC VE IN A BOUNDED HOT ELECTRON PLASMA
EVIN H.A. REYNOLDS J.A. THONEMANN P.C.

L.16/1, 1973, 90-94
ANSPORT EQUATIONS FOR DILUTE PLASMA IN A MAGNETIC ELD
ICE J.C.

L.16/1, 1973, 95-110
OCLASSICAL PLASMA TRANSPORT IN AXISYMMETRIC TOROIDAL STEMS
ASSER A.H. THOMPSON W.B.

L.16/1, 1973, 111-117
UCTUATIONS IN GUIDING CENTER PLASMA IN TWO DIMENSIONS
YLOR J.B. THOMPSON W.B.

L.16/1, 1973, 118-121
FECT OF VELOCITY DEPENDENCE OF COULOMB LOGARITHM ON E SOLUTION OF THE FOKKER-PLANCK EQUATION
OPER G.E. HERMAN P.T.

..16/1, 1973, 122-129
IVILEGED EQUILIBRIA OF A COLLISIONLESS HOMOGENEOUS OR OMOGENEOUS PLASMA
ARDI E.

..16/1, 1973, 130-139
GE AMPLITUDE STABILIZATION OF THE DRIFT INSTABILITY
NG H.

..16/1, 1973, 140-144
-MAXWELLIAN TOROIDAL EQUILIBRIA WITH SPHEROIDAL SMA-VACUUM INTERFACES
ROTT D. MORIKAWA G.K.

.16/1, 1973, 145-149
AXATION OF ANISOTROPIC COLLISIONLESS PLASMA
ASAKI S. KRALL N.A.

.16/1, 1973, 150-152
ECT OF COMPRESSIBILITY ON THE STABILITY OF A VORTEX ET IN AN IDEAL MAGNETOFLUID
AU S. GRATTON J.

.16/1, 1973, 152-155
SSURE LIMITATION IN A SIMPLE MODEL OF A TOKAMAK
S F.A. THOMAS C.L.

.16/1, 1973, 155-157
AMETRIC EXCITATION OF LOWER HYBRID INSTABILITIES
P.K. LEE Y.C.

PHYSICS

.15/1, 1973, 87
OLUTE AND CONVECTIVE INSTABILITIES
.SMA S.J.

15/1, 1973, 1-4
ING OF AN ION ACOUSTIC WAVE IN A WEAKLY IONIZED MA (IN FRENCH)
ENOT J.R. FABRY M. RICHARD M.

15/1, 1973, 5-19
VELOCITY DISTRIBUTION OF THE ELECTRONS IN AN TRON CYCLOTRON RESONANCE PLASMA
NE D.G. SHOHET J.L.

15/1, 1973, 21-27
ANOMALOUS ION HEATING IN A LASER HEATED PLASMA
BODNER S.E. CHAPLINE G.F. DEGROOT J.

VOL.15/1, 1973, 29-36
MOMENT EQUATIONS AND OHM'S LAW
GREENE J.M.

VOL.15/1, 1973, 37-48
EFFECTS OF NON-MAXWELLIAN ELECTRON ENERGY DISTRIBUTION THE ORBITAL LIMITED CURRENT-VOLTAGE CHARACTERISTICS OF CYLINDRICAL AND SPHERICAL
POLYCHRONOPOLOS B.

VOL.15/1, 1973, 49-55
ION-SOUND INSTABILITY
WESSON J.A. SYKES A. LEWIS H.R.

VOL.15/1, 1973, 57-76
NONLINEAR MODE-MODE COUPLING OF ALFVEN WAVES IN THE INTER- STELLAR MEDIUM
FU K.Y.

VOL.15/1, 1973, 77-80
RECURSIVE DERIVATION OF DRIFT KINETIC EQUATION
HAZELTINE R.D.

VOL.15/1, 1973, 81-84
HARMONIC GENERATION IN AN INHOMOGENEOUS AND NON-UNIFORMLY MAGNETIZED PLASMA
CANO R. FIDONE I. SCHWARTZ M.J. ZANFAGNA B.

VOL.15/1, 1973, 84-86
A SPECIFIC FEATURE OF SURFACE WAVES AT THE BOUNDARY OF INHOMOGENEOUS PLASMA
DEMCHENKO V.V. HUSSEIN A.M.

VOL.15/1, 1973, 89-97
AN EXACT HELICAL WAVE SOLUTION TO THE EQUATIONS OF MAGNETOHYDRODYNAMICS
WOLLEY M.L.

VOL.15/1, 1973, 99-106
A COVARIANT FORMULATION OF WAVE DISPERSION
MELROSE D.B.

VOL.15/1, 1973, 107-111
THE COMPLETE ISOTHERMALIZATION BY COLLECTIVE ELECTROMAGNETIC INTERACTIONS OF STRONGLY ANISOTROPIC MAGNETIZED COLLISIONLESS PLASMAS
CUPERMAN S. SALU Y.

VOL.15/1, 1973, 113-124
DYNAMICS OF THE NONLINEAR INTERACTION OF MAGNETOHYDRODYNAMIC WAVES
KARPLYUK K.S. ORAEVSKII V.N. PAVLENKO V.P.

VOL.15/1, 1973, 125-150
THEORY OF ELECTRON CYCLOTRON RESONANCE HEATING. II.LONG TIME AND STOCHASTIC EFFECTS
LIEBERMANN M.A. LICHTENBERG A.J.

VOL.15/1, 1973, 151-155
EFFECT OF ROTATIONAL TRANSFORM ON THE OHMICALLY HEATED PLASMA IN THE W-II B STELLARATOR
GRIEGER G. JAENICKE R. JUULMAN C.O. MAHN C.
RENNER H. RINGLER H. SCHILLING WOLF G.H. HUGILL J.

J.PL.PHYSICS

NUCLEAR FUSION

VOL.13/1, 1973, 3-6
A NEW APPROACH TO THE GENERATION OF TOKAMAK FLUID CODES USING THE PL/1 FORMAC INTERPRETER
ROSEN B. OKABAYASHI M.

VOL.13/1, 1973, 7-16
THE EFFECT OF A METALLIC REFLECTOR UPON CYCLOTRON RADIATION
KRAJCIK R.A.

VOL.13/1, 1973, 17-25
BOOTSTRAP CURRENT IN TOKAMAKS WITH NEUTRAL INJECTION
SIGHAR D.J.

VOL.13/1, 1973, 27-34
YIELDS AND TRAPPING OF NEUTRAL DEUTERIUM BEAMS CONTAINING 3PI(U) MOLECULES
BERKNER K.H. MORGAN T.J. PYLE R.V. STEARNS J.H.

VOL.13/1, 1973, 35-45
'VENETIAN-BLIND' DIRECT ENERGY CONVERTER FOR FUSION REACTORS

Fig.10 List of Titles from principal plasma physics journals, circulated for quick current awareness

KEYWORD	FREQUENCY	%
VELOCITY MEASUREMENTS OF WAVES	19	0.058
VIRIAL COEFFICIENTS	1	0.003
VISCOSITY OF PLASMA	30	0.091
VISCOUS FLOW	95	0.288
VLASOV EQUATION	133	0.403
W		
WAKES	28	0.085
WALL EFFECTS	59	0.179
WAVE PARTICLE INTERACTIONS	63	0.191
WAVE PLASMA INTERACTIONS	106	0.321
WAVE PROPAGATION (GENERAL)	329	0.996
WAVE WAVE INTERACTIONS	121	0.366
WAVEGUIDES	80	0.242
WAVES IN MAGNETIC FIELDS	134	0.406
WHISTLERS	49	0.148
WIENER-HOPF TECHNIQUE	11	0.033
WKB APPROXIMATION	24	0.073
X		
X-RADIATION	77	0.233
XENON PLASMA	38	0.115
XR SPECTROSCOPY	18	0.054
Z		
Z PINCHES	39	0.118
ZEEMAN EFFECT	7	0.021

701 KEYWORDS, 6062 TITLES

Fig.11 Frequency of use of keywords (Sample page)

LIT. SEARCH, REQUESTED BY J. HALL CULHAM

KEY IS: (=OR)

("DRIFT INSTABILITIES"|"DRIFT WAVES")&("TOROIDAL GEOMETRY"|
"TOROIDAL EQUILIBRIUM");

YEAR 1973

1731
STABILITY OF A TOROIDAL PLASMA SUBJECT TO NEUTRAL INJECTION
STIX T.H.
PRINCETON * MATT-945, 1972, P11975
* TOROIDAL GEOMETRY
INJECTION OF PARTICLES
STABILITY OF PLASMA
INHOMOGENEOUS PLASMA
KELVIN-HELMHOLTZ INSTABILITIES
* DRIFT INSTABILITIES
ACOUSTIC WAVES
* DRIFT WAVES
HEATING OF PLASMA
INSTABILITY EFFECTS
MICROINSTABILITIES
VELOCITY DISTRIBUTIONS
STABILITY CRITERIA
MAGNETIC SHEARS

1946
DRIFT INSTABILITIES DISTORTING THE MAGNETIC SURFACES OF
TOKAMAK-TYPE TOROIDAL SYSTEMS
MIKHAILOVSKY A.B.
NUCLEAR FUSION * VOL.13/2, 1973, 259-269
* DRIFT INSTABILITIES
DIFFUSION IN MAGNETIC FIELDS
TOKAMAK DEVICES
ALFVEN WAVES
MAGNETIC SURFACES
* TOROIDAL GEOMETRY
PRESSURE EFFECTS
MAGNETO-FLUID DYNAMICS
KINETIC THEORY
MAGNETIC SHEARS
TRANSPORT COEFFICIENTS
/THEORETICAL/

2942
OBSERVATION OF COLLISIONLESS DRIFT WAVES IN A TOROIDAL HEXAPOLE
NAGASHIMA T.
TAMURA S.
YAMATO H.
ARIZONO S.
OHTSUKA H.
SHIINA T.
YOSHIKAWA M.
MORI S.
PHYS.REV.LETTERS * VOL.31/2, 1973, 82-86
COLLISIONLESS PLASMA
LOW-BETA PLASMA
* TOROIDAL GEOMETRY
TOROIDAL DEVICES
MULTIPOLES
LOW FREQUENCY INSTABILITIES
* DRIFT WAVES
WAVES IN MAGNETIC FIELDS
FLUCTUATIONS OF DENSITY
DISPERSION RELATIONS
STABILITY OF WAVES
STABILITY CRITERIA
/EXPERIMENTAL/

STATISTICS: 35586 TITEL SCANNED, 1132 TITEL TESTED, 14 TITEL FOUND.

Fig.12 Portion of line-printer output from batch search (Search formulation