

話題(そのⅢ)

" International Symposium on Physics and  
Chemistry of Fission " における発表論文

標記の国際シンポジウムが、本年5月14日～18日に西独のJülichで開催されました。このシンポジウムは、1965年にSalzburgで第1回が開かれて以来、今回が第4回目に当たります。原研核データセンターの五十嵐信一氏が出席されましたので、次号に詳しい記事を寄せていただく予定ですが、とりあえずこのシンポジウムの次第及び発表論文を御紹介しておきます。なお、表中に○印を付した論文のコピーが原研核データセンターにありますので御利用下さい。

(事務局編集係)

Provisional Programme

TIMETABLE

Monday, 14 May 1979

9.15	Opening of the Symposium	
9.30	Session A	Fission barriers and probabilities
14.30	Session B	Spontaneous fission and fission barriers

Tuesday, 15 May 1979

9.30	Session C	Shell effects in potential energies and level densities
14.30	Session C	Shell effects in potential energies and level densities

Wednesday, 16 May 1979

9.30	Session D	Fission and heavy ions
14.30	Session E	Muon-induced fission

Thursday, 17 May 1979

9.30	Session F	Fragment properties and particle emission (Experiments)
14.30	Session F	Fragment properties and particle emission (Experiments)
16.30	Session G	Fragment properties and particle emission (Theory)

Friday, 18 May 1979

9.30	Session H	Dynamical theories of fission
14.30	Session F	Fragment properties and particle emission (Experiments)

MONDAY 14 MAY 1979

9.15 - Opening of the Symposium

9.30 - Session A

Fission barriers and probabilities

IAEA-SM-241/

- A1 H.C. Britt Los Alamos Scientific Laboratory Review paper:  
Box 1663, MS 456 Experimental survey of  
Los Alamos, NM 87545 fission energy surfaces  
USA
- A2 Yu. Tsipenyuk Institute for Physical Problems Review paper:  
G.N. Smirenkin Academy of Sciences Low energy photofission  
1173355 Moscow of heavy nuclei  
USSR
- A3 R. Alba Institute of Physics Subthreshold photofission  
G. Bellia University of Catania of  $^{238}\text{U}$  in the (3.6-6.00)  
L. Calabretta Catania MeV energy range  
A. Del Zoppo  
E. Migneco  
G. Russo  
R.C. Barna Institute of Physics  
R. de Pasquale University of Messina  
Messina  
Italy
- A4 M Just Max-Planck-Institute für Kernphysik Combined analysis of  
U. Goerlach D-69 Heidelberg; prompt fission, delayed  
V. Metag Physikalisches Institut fission, photofission and  
H.J. Specht Universität Heidelberg angular distribution data  
D-6900 Heidelberg 1 from  $^{234}\text{U}$ ,  $^{238}\text{U}$  and  $^{238,240}\text{Pu}$
- A5 J. Trochon Service de Physique Nucléaire La réaction (n,  $\gamma$  f) dans les  
Centre d'Etudes de Bruyères-le- resonances induites par  
Châtel, N.P. 561 neutrons lents dans  $^{235}\text{U}$ ,  $^{239}\text{Pu}$   
92542 Montrouge Cedex et  $^{241}\text{Pu}$   
France
- A6 G.V. Danilyan Institute of Theoretical and Nonconservation of parity in  
B.D. Vodennikov Experimental Physics fission of  $^{234}\text{U}$ ,  $^{236}\text{U}$  and  $^{240}\text{Pu}$   
V.P. Dronyaev Moscow  
V.V. Novitskij USSR  
V.S. Pavlov  
S.P. Borovlev

14.30 - Session B

Spontaneous fission and fission barriers

IAEA-SM-241/

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|----|---|--|--|
| B1 | <p>Yu. Ts. Oganesyanyan<br/>O.A. Orlova<br/><u>G.Y. Terakopyan</u><br/>Yu. A. Muzychka<br/>A.A. Pleve<br/>B.I. Pustyl'nik<br/>V.I. Chepigin<br/>G.N. Flerov</p> | <p>Joint Institute for Nuclear<br/>Research<br/>Head Post Office, P.O. 79<br/>Moscow<br/>USSR</p>  | <p>An investigation of spontaneous<br/>fission of some heavy element<br/>isotopes and of some<br/>regulativities of fusion<br/>reactions in the region of<br/>highly fissile compound nuclei</p> |
|    | <p>(B2)<br/>↓<br/>(D7)<br/>Y. Civelekoglu<br/>P. Glässel<br/>D. v. Harrach<br/>R. Männer<br/>H.J. Specht<br/>J. Wilhelmj</p>                                    | <p>Physikalisches Institut<br/>Universität Heidelberg<br/>D-6900 Heidelberg 1</p> <p>Los Alamos Scientific Laboratory<br/>Los Alamos, NM<br/>USA</p>   | <p>Fission phenomena in deep<br/>inelastic collisions</p>  |
| B3 | V. Metag  | <p>Physikalisches Institut<br/>Universität Heidelberg<br/>D-6900 Heidelberg 1</p>  | <p>Review paper<br/>Spectroscopic properties of<br/>fission isomers</p>  |
| B4 | <p>H.V. Klapdor<br/><br/><u>C.O. Wene</u><br/><br/>I.N. Isosimov<br/>Yu. W. Naumov</p>  | <p>Max-Planck Institut für<br/>Kernphysik<br/>D-6900 Heidelberg 1;<br/>Department of Nuclear Physics<br/>Lund Institute of Technology<br/>Lund<br/>Sweden;<br/>Institute of Physics<br/>University of Leningrad<br/>Leningrad<br/>USSR</p> | <p>Beta-delayed fission and low-<br/>lying structures in the beta<br/>strength function</p>  |
| B5 | <p><u>A. Sicre</u><br/>F. Caitucoli<br/>G. Barreau<br/>T.P. Doan<br/>T. Benfoughal<br/>B. Leroux</p>  | <p>Centre d'Etudes Nucléaires de<br/>Bordeaux-Gradignan<br/>Le Haut Vigneau<br/>33170 Gradignan<br/>France</p>   | <p>Etude des resonances de<br/>vibration dans la reaction<br/><math>^{231}\text{Pa}(n, f)</math></p>   |
| B6 | <u>D. Paya</u>  | <p>Département de Physique<br/>Nucléaire<br/>CEN Saclay, NP 2<br/>91190 Gif-sur-Yvette<br/>France</p>  | <p>Review paper<br/>Bandes de rotation dans la<br/>structure intermédiaire</p>   |

TUESDAY 15 MAY 1979

9.30 - Session C

Shell effects in potential energies and level densities

IAEA-SM-241/

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|----|--|--|---|
| C1 | <u>K. Drack</u>  | Institute for Theoretical<br>Physics<br>University of Regensburg<br>D-84 Regensburg        | Review paper<br>Critical comparison of static<br>potential energy calculations  |
| C2 | <u>J.F. Berger</u><br><u>K. Girod</u>  | Centre d'Etudes de Bruyères-<br>le-Châtel, B.P. no. 561<br>92542 Montrouge Cedex<br>France | Calcul de surfaces d'énergie<br>potentielle par la méthode<br>Hartree-Fock-Bogolyubov   |
| C3 | <u>P. Möller</u>   | Department of Mathematical<br>Physics,<br>Lund University<br>S-22007 Lund<br>Sweden        | Macroscopic-microscopic<br>calculation of fission<br>barriers and masses for<br>heavy elements with a Yukawa-<br>plus-exponential model for<br>the macroscopic energy |
| C4 | <u>P. Möller</u><br><u>S.G. Nilsson</u><br><u>O. Ragnarsson</u><br><u>S. Aberg</u> | Department of Mathematical<br>Physics<br>Lund University<br>S-22007 Lund<br>Sweden         | Review paper<br>Shell structure at high spins   |
| C5 | <u>K.E. Faber</u><br><u>A. Faessler</u><br><u>K. Ploszajczak</u>                   | Institut für Kernphysik der<br>KFA-Jülich<br>D-5170 Jülich                                 | The fission barrier of nuclei<br>at very high angular momenta   |

14.30 - Session C

Shell effects in potential energy and level densities (continued)

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|-------|--|--|--|
| C6    | <u>P. David</u><br>J. Debrus<br>J. Schulze<br>H.N. Harakeh<br>H.v. der Plicht<br>A.v. der Woude                                  | Institut für Strahlen- und<br>Kernphysik<br>D-5300 Bonn;<br>Kernphysisch Versneller<br>Instituut<br>University of Groningen<br>Groningen<br>The Netherlands  | Nuclear friction and giant<br>resonance characteristics<br>observed in fission of heavy<br>nuclei          |
| C7    | <u>J.U. Andersen</u><br>A.S. Jensen<br>E. Laegsgaard<br>K.O. Nielsen<br>J.S. Forster<br>I.V. Mitchell<br>D. Waard<br>W.M. Gibson | Institute of Physics<br>University of Aarhus<br>DK-8000 Aarhus C<br>Denmark;<br>Chalk River Nuclear Laboratories<br>AECL<br>Chalk River<br>Ontario<br>Canada | Lifetimes for heavy-ion-<br>induced fission studied by<br>crystal blocking                                 |
| (C8)  | <u>K-H. Schmidt</u><br>W. Faust<br>G. Münzenberg<br>W. Reisdorf<br>H-G. Clerc<br>D. Vermeulen<br>W. Lang                         | Gesellschaft für Schwerionen-<br>forschung<br>D-6100 Darmstadt-Arheilgen;<br>Institut für Kernphysik<br>D-6100 Darmstadt                                     | Experimental determination of<br>fission probabilities for<br>proton-rich nuclei near the<br>N = 126 shell |
| C9    | A.V. Ignatyuk<br>K.K. Istekov<br>V.N. Okolovich<br>G.N. Smirenkin  | USSR   | Level densities and fission<br>probabilities in spherical<br>and deformed nuclei                           |
| C10   | <u>K. Junker</u><br>J. Hadermann<br>K.C. Mukhopadhyay  | Eidg. Institut für Reaktor-<br>forschung<br>CH-5303 Würenlingen;<br>Schweiz. Institut für<br>Nuclearforschung<br>VH-5234 Villigen<br>Switzerland             | Theory of intrinsic state<br>density of calculation in<br>the shell-correction approach                    |
| (C11) | <u>W. Bauhoff</u><br>H. Schultheis<br>R. Schultheis<br>K. Wildermuth   | Institut für Theoretische Physik<br>Universität Tübingen<br>D-7400 Tübingen  | A many-body model study<br>of fragment formation in<br>fission   |
| C12   | <u>V.M. Strutinsky</u><br>K. Dietrich et al  | Institute for Nuclear Research<br>Prospekt nauki, 119<br>252028 Kiev-28<br>USSR  | Review paper<br>Shell structure in fission   |

*On the Shell Correction Energy at Doubly Magic Nuclei.*

WEDNESDAY 16 MAY 1979

9.30 - Session D

Fission and heavy ions

IAEA-SM-241/

- D1 F. Plasil Oak Ridge National Laboratory Review Paper  
Bldg. 6003, PO Box X Heavy-ion-induced fission  
Oak Ridge and fusion  
TN 37830  
USA
- D2 I.S. Grant Department of Physics Mass and kinetic energy  
Shuster Laboratory distributions of fragments  
University of Manchester firmed in the heavy ion  
Manchester; induced fission of  $^{208}\text{Po}$   
AERE Harwell  
Harwell  
Oxfordshire  
UK
- J.G. Cuninghame  
J.A.B. Goodall  
J.E. Freeman  
G.W.A. Newton  
V.J. Robinson  
J.L. Durell  
G.S. Foote
- D3 C. Ngo Institut de Physique Nucléaire Influence of angular momentum  
J. Peter 91406 Orsay; on the width of the mass  
B. Tamain distribution of heavy ion  
C. Lebrun ISMRA - Laboratoire de Physique induced fission  
J.F. Lecolley Corpusculaire associé à  
F. Lefebvres 1<sup>er</sup> IN2P3  
Université de Caen  
Caen  
France
- R. Chechik The Weizmann Institute of Sciences  
Rehovot  
Israel:
- F. Hanappe Université libre de Bruxelles B  
Brussels  
Belgium
- (D4)  
↓  
(B2)
- A. Baran Institute of Physics Dynamical calculations of  
K. Pomorski The Maria Sklodowska-Curie the spontaneous-fission  
University half-lives  
Lublin  
Poland:
- S.E. Larsson Department of Mathematical Physics  
P. Möller Lund Institute of Technology  
S.G. Nilsson S-22007 Lund  
Sweden:
- J. Randrup The Niels Bohr Institute  
Copenhagen  
Denmark:
- A. Lukasiak Institute for Nuclear Research  
A. Sobiczewski PL-00-68 Warsaw  
Poland
- D5 J. Peter Institut de Physique Nucléaire Review Paper  
B. Tamain 9.406 Orsay Cedex Proprieties des collisions tres  
France inelastiques entre ions lourds  
liees a la fission

14.30 - Session E

Muon-induced fission

I/EA-SM-241/

- |    |                   |  |   |
|----|-------------------|--|---|
| E1 | S. Polikanov      | Niels Bohr Institutet<br>2100 Copenhagen $\phi$<br>Denmark       | Review paper<br>Muon induced fission  |
| E2 | A. Gütter         | Eidg. Institut für Reaktor-<br>forschung<br>CH-5303 Würenlingen; | IV fission probabilities<br>and time distributions in<br>induced fission of $^{233}\text{U}$ , $^{235}\text{U}$<br>and $^{238}\text{U}$ |
|    | D. Jost           | Anorg.-Chem. Institut<br>Universität Bern<br>CH-3000 Bern;       |   |
|    | <u>H.W. Reist</u> | Eidg. Institut für Reaktor-<br>forschung                         |   |
|    | H.R. von Gunten   | CH-5303 Würenlingen<br>Switzerland                               |   |

THURSDAY 17 MAY 1979

9.30 - Session F

Fragment properties and particle emission (experiments)

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|------|--|--|--|
| (F1) | H.A. Nifenecker  | CEN Grenoble<br>Département de Recherche<br>Fondamentale/CPN<br>38041 Grenoble Cedex<br>France   | Review paper<br>Experimental approach to<br>the dynamics of fission  |
| (F2) | <u>H-G. Clerc</u><br>W. Lang<br>H. Wohlfarth<br>H. Schrader  | Institut für Kernphysik<br>Technische Hochschule Darmstadt<br>D-6100 Darmstadt;<br>Institut Laue-Langevin<br>38042 Grenoble Cedex<br>France;   | Detailed study of the nuclide<br>yields in $^{235}\text{U}$ ( $\eta$ th, f) and<br>their relation to the properties<br>of the scission configuration<br>and the dynamics of the<br>fission process |
|      | K-H. Schmidt   | Gesellschaft für Schwerionen-<br>forschung<br>D-6100 Darmstadt   |  |
| F3   | <u>M. Asghar</u><br>F. Caitucoli<br>P. Perrin<br>G. Barreau<br>C. Guet<br>B. Leroux  | Institut Laue-Langevin<br>38042 Grenoble Cedex<br>France   | Fission fragment energy<br>correlation measurements<br>for the sub-barrier $^{241}\text{Am}$<br>and $^{243}\text{Am}$ ( $\eta$ th, f)  |
| (F4) | J. Bocquet<br>R. Brissot<br>Ch. Ristori<br>J. Crancon<br>H. Nifenecker<br>K. Montova<br>K. Dakowski<br>C. Signarbieux<br>C. Guet | Centre d'Etudes Nucleaires de<br>Grenoble<br>38041 Grenoble Cedex;   | Etude de la distribution de<br>l'energie cinetique au<br>voisinage de la fission<br>symetrique de $^{236}\text{U}$   |
|      | P. Perrin  | Centre d'Etudes Nucléaires de<br>Saclay<br>91190 Gif-sur-Yvette;<br>Institut Laue-Langevin<br>38042 Grenoble Cedex;<br>Centre d'Etudes Nucléaires de<br>Grenoble<br>38041 Grenoble Cedex<br>France |  |

F5	<u>J.G. Gindler</u> <u>L.E. Glendenin</u> <u>E.D. Wilkins</u>	Argonne National Laboratory Argonne IL 60439 USA	Possible viscosity effects in neutron-induced fission of $^{232}\text{Th}$ and $^{238}\text{U}$
F6	<u>R.L. Walsh</u> <u>J.W. Boldeman</u> <u>M.M. Elcombe</u>	Australian Atomic Energy Commission Sutherland New South Wales 2232 Australia	Viscosity effects at low excitation in the neutron fission of $^{239}\text{Pu}$
F7	<u>C. Wagemans</u> <u>G. Wegener-</u> Penning <u>H. Weigmann</u> <u>R. Barthelemy</u>	Nuclear Energy Centre Boeretang 200 B-2400 Mol; CBM (Euratom) B-2440 Geel Belgium	Fission fragment mass- and energy-distributions for the neutron induced fission of $^{239}\text{Pu}$ in function of the resonance spins

14.30 - Session F (Continued)

Fragment properties and particle emission (experiments)

(F9)	<u>H.O. Denschlag</u> <u>H. Braun</u> <u>W. Faubel</u> <u>G. Fischbach</u> <u>H. Meixler</u> <u>G. Paffrath</u> <u>W. Pörsch</u> <u>M. Weis</u> <u>H. Schrader</u> <u>G. Siegert</u>  Z.B. Alfassi  J. Blachot  H.N. Erten  T. Izak-Biran  T. Tamai  A.C. Wahl  K. Wolfsberg	Institut für Kernchemie Universität Mainz D-65 Mainz;  Institut Laue-Langevin 38042 Grenoble Cedex France; Ben Guion University Beer Sheva Israel; Centre d'Etudes de Grenoble Grenoble Middle East Technical University Ankara Turkey; Soreq Nuclear Research Centre Yavne Israel; Kyoto University Kyoto Japan; Wastington University St. Louis; Los Alamos Scientific Laboratory Los Alamos USA Paper prepared at: Institut Laue-Langevin Grenoble France: and Institut für Kernchemie D-65 Mainz	Distribution of nuclear charge and angular momentum in chains 132 - 137, 99 and 102 of $^{235}\text{U}$ ( $n_{th}, f$ ) at various kinetic energies and charge states of the fragments
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- F10 J.P. Bocquet Centre d'Etudes Nucléaires  
F. Schussler de Grenoble  
E. Monnard 38041 Grenoble Cedex  
France;  
K. Sistemich Institut der Kernphysik der  
KFA-Jülich  
D-5170 Jülich  
Dependance of  $\mu$ sec isomer  
yields with the kinetic  
energy of the fragments  
in  $U^{235}$
- F11 E. Piasecki Institute of Nuclear Research  
L. Nowicki 05-400 Swierk  
M. Kisielinski Poland  
Review paper  
Polar emission in fission
- F12 D.G. Vass University of Edinburgh  
D.E. Cumpstey Edinburgh  
UK  
A multiparameter investigation  
of  $^3H$  and  $^4He$  emission in the  
fission of  $^{252}Cf$
- F13 C. Guet Institute Laue-Langevin  
H. Nifenecker 38042 Grenoble Cedex;  
DRF/CFN C.E.N. Grenoble  
38041 Grenoble Cedex;  
C. Signarbieux C.E.N. Saclay  
91190 Gif-sur-Yvette  
France  
On the compatibility of LRA  
fission distributions with  
compact scission

16.30 - Session G

Fragment properties and particle emission (theories)

- G1 G. Schütte Institut für Theoretische Physik  
University of Heidelberg  
D-69 Heidelberg  
Estimate of odd-even effects  
in nuclear fission
- G2 S.S. Kapoor Bhabha Atomic Research Centre  
M. Prakash Trombay  
V.S. Ramamurthy Bombay 400 085  
India  
Studies in the statistical  
theory of nuclear fission
- G3 P. Fong Emory University  
Atlanta  
GA 30322  
USA  
New perspectives of the  
statistical theory of  
fission

FRIDAY 18 MAY 1979

9.30 - Session H

Dynamical theories of fission

IAEA-SM-241/

- |    |   |   |   |
|----|---|---|---|
| H1 | H. Flocard  | Institut de Physique Nucléaire<br>91 Orsay<br>France  | Self consistent dynamics<br>of fission  |
| H2 | <u>P.-G. Reinhard</u><br>K. Goeke                                 | Institut für Kernphysik<br>Universität Mainz<br>D-6500 Mainz;<br>Institut für Kernphysik der<br>KFA-Jülich<br>D-5170 Jülich   | Quantum corrections to<br>potential-energy surfaces<br>and its influence on barriers          |
| H3 | <u>C. Guet</u><br>R. Bengtsson<br>M. Brack                        | Institut Laue-Langevin<br>38042 Grenoble Cedex;<br>DRF/CFN, CEN Grenoble<br>38041 Grenoble Cedex<br>France;<br>Institut für Theoretische Physik<br>Universität Regensburg<br>D-84 Regensburg                                    | Semi-classical description<br>of nuclear deformations<br>between saddle-point and<br>scission |
| H4 | <u>A.S. Jensen</u><br><u>K. Heese</u><br>P. Siemens<br>H. Hofmann | Institute of Physics<br>University of Aarhus<br>DK-8000 Aarhus C;<br>Niels Bohr Institute<br>University of Copenhagen<br>DK-2100 Copenhagen Ø<br>Denmark<br>Physik-Department<br>Technical University Munich<br>D-8046 Garching | Linear response theory applied<br>to the fission process                                      |
| H5 | F. Dickmann   | Kernforschungszentrum Karlsruhe<br>Institut für Angewandte Kern-<br>physik<br>D-7500 Karlsruhe  | Dynamics of the late stages<br>in fission   |
| H6 | J. Randrup  | Lawrence Berkeley Laboratory<br>Berkeley<br>CA. 94720<br>USA<br>Paper prepared at:<br>NORDITA, Nordisk Institut for<br>Teoretisk Atomfysik<br>DK-2100 Copenhagen Ø<br>Denmark   | Review paper<br>Shell structure in fission  |

14.30 - Session F (Continued)

Fragment properties and particle emission (experiments)

YIDA-SW-241/

- F14 D.C. Hoffman Nuclear Science Division Review paper  
Lawrence Berkeley Laboratory Fission properties of  
Berkeley very heavy actinides  
C.A. 94720  
USA  
Paper prepared at:  
Los Alamos Scientific Laboratory  
Los Alamos  
NM 87545  
USA
- F15 E.K. Hulet University of California, L-232 Possible three-body fragmentation  
J.F. Wild Lawrence Livermore Laboratory in the spontaneous fission of  
R.W. Loughheed Livermore 259Md  
P.A. Baisden C.A. 84550;  
J.H. Landrum  
R.J. Dougan  
M. Mustafa  
A. Ghiorso Lawrence Berkeley Laboratory  
J.M. Nitschke Berkeley  
C.A. 94720  
USA
- F16 R.H. Iyer Bhabha Atomic Research Centre Evidence for the occurrence  
V.K. Bhargava Trombay of new shoulders in low  
V.K. Rao Bombay 400 085 energy fission mass  
S.G. Marathe India distribution  
S.M. Sahakundu
- F17 B. Schröder Department of Physics Fission of light and medium-  
G. Andersson University of Lund heavy nuclei induced by  
M. Areskoung S-223 62 Lund 600 MeV protons  
H-A. Gustafsson Sweden;  
G. Hylten  
E. Hagebø Department of Chemistry  
University of Oslo  
Oslo  
Norway
- H. Specht Institut für Theoretische Physik Summary of the Symposium  
Universität Heidelberg  
D-69 Heidelberg

Closing of the Symposium