サンタフエ強中性子源に関する国際会議出張報告

竹腰秀邦（日本原子力研究所）

この会議はSanta Feで一週間開かれ，中一日Los Alamosの見学があつた。約100名の参加があり，原子核物理関係⅓，固体物理関係⅓，原子炉加速器の設計関係⅓の色分けであつた。ソ連からの参加はとりやめとなり，残念であつた。これは同様な主題のパネルがソ連（ドウブナ）において行なわれたのが主たる原因であり，この会議への提出レポートのリストを入手したので，御参考までにサンタフエ会議への提出レポートのあとに加えて御紹介したい。これらドウブナ会議のレポートのアブストラクトのみ入手してあるので興味をおもちの方はシグマ委員会に御連絡下さい。

会議は

Session Ⅰ

強いflux を使つての研究の現状の紹介が，固体物理，原子核物理，原子核断面積測定の立場からなされた。

Session Ⅱ　Continuous reactor

Continuous な中性子源としてhigh flux reactorの現状報告と将来のtypeについての議論がなされ，10^{17}以上のflux の continous reactor は作るのが困難であるという結論が出された。

Session Ⅲ　Pulsed fission neutron source

パルス炉とリニアツクの電子入射によるパルス炉の話がなされた。この種のものは将来，固体物理の研究や熱中性子関係の研究には，有力になると思われ，10^{18}位のflux で50～100cps で働かす事が出来るパルス炉が作られるだろうと結論が出された。

Session Ⅳ　Non-fission devices for the production of high intensity neutron burst

シンクロサイクロトロンやサイクロトロン，リニアツクによる中性子発生の話で，この種の中性子源は高分解能の原子核実験に有力であり，かなり大型の加速器が，この目的のために作られよう。

Session Ⅴ　Accelerator as intense source of thermalized neutrons

超大型の加速器によつて中性子を発生させthermalize させthermal neutron源として使う話で，10^{19}程度のcontineusな中性子源の製作が可能であるという結論であつた。

Session Ⅵ　Pannel discussion on use and comparative merit of system

1. 固体物理関係，将来はdamage の研究以外はパルス中性子源で殆んど研究がなされるだろうという意見であつた。
2. 原子核関係は10eV はpulse reactor，10～100 keVはリニアツク100 keV 以上は加速器による中性子源がよい。

List of Papers submitted to
Seminar on Intense Neutron Source

(Santa Fe, New Mexico:19-23 Sept.,1966)

Session 1: Bases for Interest in Higher Flux

1. R.M.Brugger, Idaho Nuclear Corporation;
   Study of Condensed Matter Using Neutrons

2. J.A.Harvey, Oak Ridge National Laboratory;
   Neutron Cross Sections and Related Measurements

3. L.M.Bollinger, Argonne National Laboratory;
   Nuclear Physics Experiments Performed with Neutrons

Session 2a: Continuous Reactor

1. J.Hendrie and H.J.Kouts, Brookhaven National Laboratory;
   HEBR: A Source Reactor for Neutron Beams

2. D.H.Shaftman and R.P.Savio, Argonne National Laboratory;
   The Argonne Advanced Research Reactor (AARR)

3. K.H.Beckurts and R.Dautray, Kernforschungszentrum,Karlsruhe;
   Project Studies for the Franco-German High Flux Reactor

4. V.S.Crocker and D.B.Halliday,A.E.R.E., Harwell;
   A U.K. Study for a High Flux Beam Reactor

5. T.E.Cole, Oak Ridge National Laboratory;
   The Oak Ridge High Flux Isotope Reactor (Design and Initial Operation)

6. P.Armbruster,G.Maier,R.Scherm,W.Schmatz and T.Springer, Kernforschungsanlange Jülich;
   Design Studies for the Experimental Equipment at a Very High Flux Reactor

Session 2b:

1. R.Dautray, Centre d'Etudes Nucléaires de Saclay;
   Capabilities and Limitation of High Flux Reactors, Current and Design or Construction

2. B.I.Spinrad, Argonne National Laboratory;
   Limitations of Steady State, High Flux Reactor, Current and Future

Session 3: Pulsed Fission Neutron Sources

1. J.A.Larrimore, R.Haas, K.Giegerich, V.Raievski and W. Kley, Euratom, Ispra;

   The Sora Reactor: Design Status Report

2. C.A.Stevens, J.R.Beyster, J.L.Russel,Jr., General Atomic

   Operation Characteristics of Accelerator-Booster Pulsed Research Reactors

3. W.L.Whitemore and G.B.West, General Atomic

   A Multiple Pulsed Triga Type Reactor for Neutron Beam Research

4. M.J.Poole, A.E.R.E., Harwell;

   The Superbooster

5. V.Raievski, Euratom, Ispra;

   Comparison of Repetitively Pulsed Devices

6. K.C.Hoffman, R.Parsick, M.Reinch, M.Levine, Brookhaven Nat.Lab.;

   Engineering Problems in Pulsed Neutron Sources

7. B. C. Diven, Los Alamos Scientific Laboratory;

   The Nuclear Explosion as a Single Burst Neutron Source

8. J.W.T.Dabbs, Oak Ridge National Laboratory;

   Feasibility of Certain Experiments Using Underground Nuclear Explosion

Session 4: Non-Fission Devices for the Production of High Intensity Neutron Burst

1. W.W.Havens,Jr., Columbia University;

   Cyclotrons, Synchrocyclotrons, and Synchrotrons as Pulsed High Intensity Neutron Sources

2. J.E.Leiss, National Bureau of Standards;

   Electron Linear Accelerators as Sources of High Intensity Neutron Bursts

3. J. Mather, Los Alamos Scientific Laboratory;

   An Intense Source of Neutrons from the Dense Plasma Focus

4. S.Cierjacks, P.Forti, L.Kropp and H.Unseld, Inst. für Angewalte Kernphysik Kernforschungszentrum, Karlsruhe;

   The Sector-Focused Cyclotron as a Powerful Tool for Fast Neutron Time-of-Flight Research

Session 5: Accelerators as Intense Source of Thermalized Neutrons

1. G.A.Bartholomew, Chalk River Nuclear Laboratories, AECL;
   Spallation-Type Thermal Neutron Sources

2. D.E.Nagle, Los Alamos Scientific Laboratory;
   Prospects for High Current Accelerators

3. B. Buras, Institute of Nucl.Res., Swierk and University of Warsaw;
   Application of Pulsed Neutron Sources to Structure and Lattice Dynamics Studies of Solids

Session 6: Pannel Discussion on Use and Comparative Merits of System

A. Structure Studies Involving Diffracted Neutrons
   (Caglioli, Buras, Hastins, Wilkinson)

B. Inelastic Scattering
   (Palevsky, Glöser, Kley, Woods, Jacrot)

C. Neutron and Fission Physics
   (Michaudon, Armbruster, Milton, Sailor, Bollinger)

D. Nuclear Physics
   (Bartholomew, Ringo, Leibnitz, Michaudon, Vervier)

(ドゥブナ会議)

List of Papers
submitted to

IAEA- Panel on Research Applications of Repetitively-Pulsed Reactors and Boosters

Dubna, USSR, 18-22 July 1966

PL-203/1 V.Raievski;
Some Problems Connected with the Operation of Pulsed Fast Reactors Based on the SORA Reactor Design

PL-203/2 B.Buras;
Application of Repetitively-Pulsed Reactors to Structure and Dynamics Studies of Solids

PL-203/3 R.M.Brugger, R.B.Bonnion,T.G.Worlton,E.R.Peterson;
Neutron Diffraction Studies of Samples at High Pressures

PL-203/4 P. A. Egelstaff;
Use of Pulsed Neutron Sources in Solid and Liquid-State Physics

PL-203/5 G.A.Bartholomew;
The Canadian Intense Neutron Generator Project

PL-203/6 G. A. Bartholomew;
Neutron Capture γ-Rays

PL-203/7 M.J.Poole;
The Superbooster

PL-203/8 J.L.Russell,Jr.,K.L.Crosbie, C.A.Stevens;
Accelerator Pulsed Fast Assembly

PL-203/9 I.M.Frank, L.B.Pikelner,F.L.Shapiro and E.I.Sharapov;
Nuclear Research Carried out at IBR

PL-203/10 V.V.Golikov, Ah.A.Kozlov, and F.L. Shapiro;
Coherent Scattering of Slow Neutrons in Solid and Liquid Metals at Small Momentum Transfer

PL-203/11 L. B. Pikelner and V.T.Rudenko;
IBR Pulsed Reactor with Injector

PL-203/12 F. L. Shapiro;
The Measurement of Magnetic Dipole and Electric Quadrupole Moments of the Compound Nucleus Resonance States

PL-203/13 K.Parlinski, M.Sudnik-Hrynkiewicz, A.Bajorek and J.A.Janik;
Time-of-Flight Spectrometer with Beryllium Filter and Crystal Monochromator in Front of a Counter

PL-203/14 M. J. Pevsner;
Pulsed Neutron Source Project of the Kurchatov Institute

PL-203/15 S. M. Feinberg;
Consideration of the Ultimate Capability of Repetitively-Pulsed Neutron Sources

PL-203/16 F. Carvalho and W. Gläser;
Pulse Shortening and Neutron Storage Effect in Rotating Crystals

PL-203/17 V.G.Liforev et al.; Double Slow Neutron Spectrometer at IBR Reactor

PL-203/18 W. Kley; The Use of the SORA Reactor for Neutron Physics Experiments