

FFAG 2007

FFAG 2007

Rapport sur les contributions

ID de Contribution: 0

Type: **Oral presentation**

Ray-tracing simulations in spiral sector FFAG magnets using Zgoubi code.

mardi 17 avril 2007 10:00 (15 minutes)

The computer code Zgoubi calculates charged particle trajectories in electric and magnetic fields. It allows the study of complex sequences of optical elements such as dipoles, quadrupoles, arbitrary multipoles, RF cavities and radial sector FFAG magnets. A new optical element - spiral sector FFAG magnet –has been recently installed in order to perform ray-tracing simulations in such a structure. This paper describes how this method for modeling of the magnetic field in spiral scaling FFAG magnets has been developed. We then describe first simulation results for spiral FFAG lattices in the frame of the French RACCAM project which has to study and build a FFAG magnet for protontherapy.

Auteur principal: M. FOURRIER, Joris (LPSC / IN2P3 / CNRS)

Orateur: M. FOURRIER, Joris (LPSC / IN2P3 / CNRS)

Classification de Session: Medical applications

Classification de thématique: Medical Applications

ID de Contribution: 1

Type: **Oral presentation**

Hamiltonian Description of the Dynamics of Particles in Non Scaling FFAG Machines

lundi 16 avril 2007 11:30 (20 minutes)

Based on the synchro-betatron formalism the theory of accelerated orbits in FFAG accelerators is developed. Traditional notions like dispersion, momentum compaction and slip phase have been introduced with due account of the reference and accelerated orbit. Further, some preliminary features of the longitudinal dynamics have been pointed out.

Auteur principal: Prof. TZENOV, Stephan (CCLRC Daresbury Laboratory)

Orateur: Prof. TZENOV, Stephan (CCLRC Daresbury Laboratory)

Classification de Session: Proton Acceleration - ADS - RIA

Classification de thématique: Afternoon working group session - 4th day

ID de Contribution: 2

Type: **Oral presentation**

Non-Scaling FFAGs for Radio-Isotopes Production

lundi 16 avril 2007 09:00 (20 minutes)

As an alternative to the use of a Superconducting Linac, we have explored at Brookhaven National Laboratory a complex made of a pair of Non-Scaling FFAGs for the acceleration of Ions of Uranium-238 for the production of Radio-Isotopes and esotic nuclear fragments. The beam power requirement is 400 kWatt at an energy of 400 MeV/u. The design of the FFAG accelerators is straightfoward and seems considerably less expensive than the full length of a Superconducting Linac. The major issue is the intensity, emittance and repetition rate of the ion source required. Operation ar 1 kHz, 10kHz and continuous mode are described.

Auteur principal: Dr RUGGIERO, Alessandro (Brookhaven National Laboratory)

Orateur: Dr RUGGIERO, Alessandro (Brookhaven National Laboratory)

Classification de Session: Proton Acceleration - ADS - RIA

Classification de thématique: Proton acceleration for ADS

ID de Contribution: 3

Type: **Oral presentation**

A 10-MWatt 1-GeV Proton Driver with FFAG accelerator

lundi 16 avril 2007 12:00 (20 minutes)

The use of a Non-Scaling FFAG accelerator is here described for the acceleration of Protons to 1 GeV or more for an average beam power of 10 MWatt or more. Several modes of operation are described: at the repetition rate of 1 kHz, 10 kHz, and in Continuous Mode. The use of Harmonic Number Jump method for acceleration is also assumed. Possible applications for the Proton Driver includes Spallation Neutron Source, pulsed and Continuous, driving a subcritical nuclear core for energy production, waste transmutation, tritium production, radioisotopes production, and more...

Auteur principal: Dr RUGGIERO, Alessandro (Brookhaven National Laboratory)

Orateur: Dr RUGGIERO, Alessandro (Brookhaven National Laboratory)

Classification de Session: Proton Acceleration - ADS - RIA

Classification de thématique: Proton acceleration for ADS

ID de Contribution: 4

Type: **Oral presentation**

Comments on the Harmonic Number Jump method for acceleration of Protons in FFAG

The method of acceleration of Protons in a Non-Scaling FFAG has been proposed recently. Some issues are still outstanding and need a closer review, namely the spreading of rf phase due to the discontinuity of the energy gain profile. At the purpose a numerical tracking has been done and the result will be described. Other issues deal with the realistic methods to achievement the required energy gain profile.

Auteur principal: Dr RUGGIERO, Alessandro (Brookhaven National Laboratory)

Orateur: Dr RUGGIERO, Alessandro (Brookhaven National Laboratory)

Classification de thématique: Afternoon working group session - 2nd day

ID de Contribution: 5

Type: **Oral presentation**

Sector Magnets –edge effect an exercise with the Polymorphic Tracking Code [PTC]

jeudi 12 avril 2007 16:15 (20 minutes)

Using the sector magnet wedges improves focusing in the vertical plane, reduces orbit offsets and tune variations of the non-scaling FFAG. There is a problem in a correct treatment of the wedge effect in the combined function magnets in the existing accelerator physics codes. To eliminate potential problems of the sector magnet with wedges a new magnet without wedges is constructed but using new bending angle. Comparisons between of these two kinds of sector magnets used in the non-scaling FFAG lattice are described.

Summary

This is one of the most important magnet properties in the non-scaling FFAG and their applications. Tools used have to be correct.

Auteur principal: Dr TRBOJEVIC, Dejan (Brookhaven National Laboratory)

Co-auteur: Prof. FOREST, Eitenne (KEK)

Orateur: Dr TRBOJEVIC, Dejan (Brookhaven National Laboratory)

Classification de Session: Working groups sessions

Classification de thématique: Afternoon working group session - 1st day

ID de Contribution: 6

Type: **Non spécifié**

Linear sector magnet ring for the RACCAM design

The RACCAM project requires acceleration of protons to 180 MeV. A ring made of sixteen rotated linear combined function sector magnets, to accelerate protons with a momentum range of $-54% < dp/p = < +54%$ is presented. Ring properties: orbits, layout, betatron functions, and tunes calculated by the PTC (Polymorphic Tracking Code) are presented.

Summary

A present design is made of scaling spiral FFAG.

Auteur principal: TRBOJEVIC, Dejan (Brookhaven National Laboratory)

Co-auteur: Prof. KEIL, Eberhard (CERN)

Orateur: TRBOJEVIC, Dejan (Brookhaven National Laboratory)

ID de Contribution: 7

Type: **Oral presentation**

Update on the non-scaling FFAG superconducting gantry for carbon/proton therapy application

mardi 17 avril 2007 12:00 (20 minutes)

The major problem in a design and building of the carbon/proton therapy facilities are the isocentric gantries. The weight of the transport elements of the isocentric gantry in the most recent design in Darmstadt, Germany is 130 tons, while the whole gantry with support structure; (rotating part with transport elements and counter weights) is 630 tons. This represents the most difficult challenge of the whole facility. We present a non-scaling FFAG superconducting magnet design with an estimated weight of 1.5 tons. Advantages of such a system are a smaller weight and ease in operation due to the fixed fields for all required ion energies for treatment.

Summary

This represents a great advantage of the non-scaling FFAG concept with respect to the other ways of beam transport in the isocentric carbon/proton gantry application.

Auteur principal: TRBOJEVIC, Dejan (Brookhaven National Laboratory)

Co-auteur: Prof. KEIL, Eberhard (CERN)

Orateur: TRBOJEVIC, Dejan (Brookhaven National Laboratory)

Classification de Session: Medical applications

Classification de thématique: Medical Applications

ID de Contribution: 8

Type: **Oral presentation**

Non-scaling FFAG lattice design for the Radioactive Ion Accelerator

lundi 16 avril 2007 09:30 (20 minutes)

A major cost of the Radioactive Ion accelerator is in the superconducting linac the present design assumes three superconducting linacs with stripping foils between two stages of heavy ion acceleration. The heavy ion maximum kinetic energy is assumed to be 400 MeV/u with a total of 400 kW power for uranium ion beams. To reduce the cost for the long superconducting linacs multi-turn acceleration with the non-scaling FFAG is proposed. A lattice for this acceleration is presented.

Summary

There are few different ways to achieve a fast acceleration required in the non-scaling FFAG, but the best solution is still an open question.

Auteur principal: Dr TRBOJEVIC, Dejan (Brookhaven National Laboratory)

Co-auteur: Prof. RUGGIERO, Alesandro (BNL)

Orateur: Dr TRBOJEVIC, Dejan (Brookhaven National Laboratory)

Classification de Session: Proton Acceleration - ADS - RIA

Classification de thématique: Proton acceleration for ADS

ID de Contribution: 9

Type: **Non spécifié**

Very compact non-scaling FFAG for proton/carbon therapy

A very compact superconducting non-scaling FFAG lattice for the carbon/proton therapy facility is presented. The very small orbit offsets usually produced with the non-scaling FFAG are compromised on the expense of number of magnets and machine size.

Summary

This design is competing with other cyclotrons, synchrotrons, scaling FFAG's.

Auteur principal: Dr TRBOJEVIC, Dejan (Brookhaven National Laboratory)

Co-auteur: Prof. KEIL, Eberhard (CERN)

Orateur: Dr TRBOJEVIC, Dejan (Brookhaven National Laboratory)

ID de Contribution: **10**Type: **Non spécifié**

Race Track Muon Acceleration

A combination of the two different non-scaling FFAG lattices makes a racetrack shape. A lattice with a very large radius of curvature and smaller number of cells is designed for the placement of the RF cavities. It is matched with respect to dispersion and other betatron functions at the central momentum to the two arcs with the non-scaling FFAG without drifts. The lattice designs are presented in details.

Auteur principal: Dr TRBOJEVIC, Dejan (Brookhaven National Laboratory)

Orateur: Dr TRBOJEVIC, Dejan (Brookhaven National Laboratory)

ID de Contribution: 11

Type: **Oral presentation**

Tracking studies regarding the electron model 3-5.4463~MeV of a non-linear, non-scaling, proton driver FFAG 3-10~GeV.

lundi 16 avril 2007 11:00 (20 minutes)

This paper describes the setting up of ray-tracing tools and preliminary beam dynamics studies concerning the electron model 3-5.4463~MeV of a non-linear, non-scaling proton driver FFAG 3-10~GeV.

Auteur principal: M. LEMUET, franck (doctoral student)

Orateur: M. LEMUET, franck (doctoral student)

Classification de Session: Proton Acceleration - ADS - RIA

Classification de thématique: Proton acceleration for ADS

ID de Contribution: 13

Type: **Oral presentation**

Technology

mardi 17 avril 2007 13:30 (30 minutes)

Auteur principal: Dr OHMORI, Chihiro (KEK)

Orateur: Dr OHMORI, Chihiro (KEK)

Classification de Session: Summaries

Classification de thématique: Summaries session

ID de Contribution: 15

Type: **Oral presentation**

Muon

mardi 17 avril 2007 14:00 (30 minutes)

Orateur: Dr PASTERNAK, Jaroslaw (LPSC/IN2P3/CNRS)

Classification de Session: Summaries

Classification de thématique: Summaries session

ID de Contribution: **16**

Type: **Oral presentation**

Proton

mardi 17 avril 2007 14:30 (30 minutes)

Orateur: Dr REES, Grahame (CCLRC)

Classification de Session: Summaries

Classification de thématique: Summaries session

ID de Contribution: 17

Type: **Oral presentation**

Medical

mardi 17 avril 2007 15:00 (30 minutes)

Orateur: Dr MANDRILLON, Pierre (CAL/MEDICYC/AIMA)

Classification de Session: Summaries

Classification de thématique: Summaries session

ID de Contribution: 19

Type: **Oral presentation**

Status and overview of PRISM-FFAG ring

jeudi 12 avril 2007 09:30 (20 minutes)

A PRISM-FFAG ring is one of the key component in PRISM (Phase Rotated Intense Slow Muon) project which aims at searching for a charged-lepton-flavor-violation process beyond the Standard Model. At the FFAG ring, energy-spread of muon beam is made narrower by a phase-rotation technique with RF field. A lattice design, a construction of large-aperture magnets and a development of a high-gradient RF cavity have been done since 2003. Here, overview and status about the PRISM-FFAG ring are presented.

Auteur principal: Dr ARIMOTO, Yasushi (Osaka U.)

Orateur: Dr ARIMOTO, Yasushi (Osaka U.)

Classification de Session: FFAG projects status and overview

Classification de thématique: FFAG projects status and review

ID de Contribution: 20

Type: **Oral presentation**

Field measurement of PRISM-FFAG magnets

vendredi 13 avril 2007 10:00 (20 minutes)

Scaling FFAG magnets for PRISM-FFAG ring have been designed and constructed. The magnets have a large aperture of 1000 mm in horizontal and 300 mm in vertical. Measurement of magnetic field has been done for the three magnets. Here, the measurement results will be presented.

Auteur principal: Dr ARIMOTO, Yasushi (Osaka U.)

Orateur: Dr ARIMOTO, Yasushi (Osaka U.)

Classification de Session: Technology for FFAG accelerators

Classification de thématique: Muon and e-model for EMMA

ID de Contribution: 21

Type: **Oral presentation**

Hadron Cancer Therapy Complex Using Non-Scaling FFAG Design

mardi 17 avril 2007 11:30 (20 minutes)

Non-scaling FFAG rings for cancer hadron therapy offer reduced physical aperture and large dynamic aperture as compared with scaling FFAGs. We consider a system of three non-scaling FFAG rings for cancer therapy with 250 MeV protons and 400 MeV/u carbon ions. Hadrons are accelerated in a common RFQ and linear accelerator, and injected into the FFAG rings at $v/c=0.1294$. H⁺ and C⁶⁺ ions are accelerated in the two smaller/larger rings to 31 and 250 MeV/68.8 and 400 MeV/u kinetic energy, respectively. The lattices consist of doublet cells with a straight section for rf cavities. The frequency modulated rf system operates at frequencies between about 8 and 25 MHz.

Auteur principal: Dr KEIL, Eberhard (CERN)

Co-auteurs: Dr SESSLER, Andrew (LBNL); Dr TRBOJEVIC, Dejan (BNL)

Orateur: Dr KEIL, Eberhard (CERN)

Classification de Session: Medical applications

Classification de thématique: Medical Applications

ID de Contribution: 22

Type: **Oral presentation**

Spiral FFAG acelerator for cancer therapy

mardi 17 avril 2007 10:15 (15 minutes)

The Fixed Field Alternating Gradient (FFAG) accelerator with 100 Hz repetition rate is very interesting for medical applications. The Spiral FFAG ring accelerator for protontherapy is studied in the framework of the RACCAM project. Possible scenarios for the variable energy operation are discussed. The injection/extraction schemes are shown and the linear optics design is presented. A possible upgrade to a carbon facility is briefly described.

Auteur principal: Dr PASTERNAK, Jaroslaw (LPSC Grenoble)

Orateur: Dr PASTERNAK, Jaroslaw (LPSC Grenoble)

Classification de Session: Medical applications

Classification de thématique: Medical Applications

ID de Contribution: 23

Type: **Oral presentation**

EMMA and Muon FFAG Tracking Studies

samedi 14 avril 2007 11:00 (20 minutes)

Non-scaling FFAG has to cross many low order resonances during acceleration. Taking EMMA and Muon acceleration rings as a model, we study the effect of the resonance crossing by tracking. In particular, orbit distortion due to integer resonances and beam size growth (not emittance growth) due to half-integer resonances are investigated. We also discuss a practical way to study the subject in the EMMA ring.

Auteur principal: Dr MACHIDA, Shinji (CCLRC Rutherford Appleton Laboratory)

Orateur: Dr MACHIDA, Shinji (CCLRC Rutherford Appleton Laboratory)

Classification de Session: Muon and e-model EMMA

Classification de thématique: Muon and e-model for EMMA

ID de Contribution: 24

Type: Non spécifié

Tune-stabilized Linear-field, Nonscaling FFAG Lattice Design

vendredi 13 avril 2007 15:45 (30 minutes)

A hybrid design for a FFAG has been invented which uses a combination of edge and alternating-gradient focusing principles applied in a specific configuration to a combined-function magnet to stabilize tunes through an acceleration cycle which extends over a factor of 2-6 in momentum. Previous work on fixed-field alternating gradient (FFAG) accelerators have required the use of strong, high-order multipole fields to achieve this effect necessitating complex and larger-aperture magnetic components as in the radial or spiral sector FFAGs. Using normal conducting magnets, the final, extracted energy from this machine attains 400 MeV/nucleon and thus supports a carbon ion beam in the energy range of interest for cancer therapy. Competing machines for this application include a superconducting cyclotron and a synchrotron. The machine proposed here has the high current advantage of the cyclotron with the smaller radial aperture requirements that are more typical of the synchrotron; and as such represents a desirable innovation for therapy machines.

Summary

A hybrid design for a FFAG accelerator has been developed which successfully exploits strong-focusing to provide tune and envelope control, and then suppresses variations with beam energy using weak focusing. The net effect is to enlarge the momentum space which remains within the stable range in tune space. The conceptual approach is easy to understand, but difficult to simulate accurately with the limited capability of present optics codes, but work is in progress to present a more accurate representation.

With stabilized tunes, this FFAG behaves more like a synchrotron with multiple energies available for extraction and use, and with the attractive low-loss feature characteristic of synchrotrons. With its fixed fields, the magnets and power supplies are simple and this machine can be effectively operated continuously with high output beam current which is the noted strength of the cyclotron. The designs here specifically apply only normal conducting fields and still attain carbon therapy kinetic energies of 400 MeV/nucleon. Also like the synchrotron and unlike the cyclotron, there are multiple places to extract beam supporting multiple treatment rooms or other applications. This machine exhibits a reasonable dynamic aperture and performance due to the use of only linear gradient (quadrupole) and constant (dipole) fields which are known for their stable equations of motion.

Preliminary tracking studies at the injection energy using MAD indicate a reasonable, full, geometric dynamic aperture of 10-20 π mm-mr. Although almost 3 orders of magnitude less than the comparable muon accelerator, which requires an exceptionally large acceptance for muons, this value is yet more than acceptable for the small emittances associated with proton and carbon beams.

Auteur principal: Dr JOHNSTONE, Carol (Fermilab)

Orateur: Dr JOHNSTONE, Carol (Fermilab)

Classification de Session: Working groups sessions

Classification de thématique: Afternoon working group session - 2nd day

ID de Contribution: 25

Type: **Oral presentation**

Muon and e-model EMMA: EMMA Injection/Extraction

vendredi 13 avril 2007 14:45 (20 minutes)

EMMA electron NS-FFAG is a prototype machine of NS-FFAG. In order to investigate beam dynamics in detail, injection and extraction energy should cover whole energy range. In addition, tune betatron tune varies from 0.1 to 0.4 along the energy range. Thus, to satisfy these requirements, different approach is required for the injection scheme compared to ordinary synchrotrons. In the talk, the present status of investigation for the injection and extraction is to be presented

Auteur principal: Dr YOKOI, takeichiro (University of Oxford)

Orateur: Dr YOKOI, takeichiro (University of Oxford)

Classification de Session: Working groups sessions

Classification de thématique: Afternoon working group session - 2nd day

ID de Contribution: 26

Type: **Oral presentation**

Coil shaping magnet design

vendredi 13 avril 2007 11:30 (20 minutes)

In the frame of the RACCAM project, the coil shaping magnet design is studied. The main advantages of that method are to allow to keep horizontal tune constant and make possible the variation of k . A first simple model of conductors of infinite length and no iron yoke gives a first set of current intensities using Biot and Savart law. The problem is then to solve the linear system $A \cdot x = B = 0$. The matrix A generated is often ill-conditioned and requires a particular solving method based on matrix 1-norm minimisation. It can give satisfying results in 2d, but current intensities have to be adjusted if the geometry generates an ill-conditioned matrix A . With a 3d simulation (not done yet) other adjustments are needed to match the field law. Pushing geometry investigations a bit further, one can calculate the field generated by a series of conductors of limited length, arc shaped and distributed along a spiral (the one which supports the edges of the magnet). If arcs centers are located at machine ring center, it appears clearly that the maximum field of one conductor is not always located inside the limits of the iron yoke. This still have to be confirmed with a 3d simulation.

Auteurs principaux: Dr AUTIN, Bruno (CERN); M. FROIDEFOND, Emmanuel (LPSC/IN2P3/CNRS)

Orateur: M. FROIDEFOND, Emmanuel (LPSC/IN2P3/CNRS)

Classification de Session: Technology for FFAG accelerators

Classification de thématique: Technology for FFAG accelerators

ID de Contribution: 27

Type: **Oral presentation**

Novel 200-400 Hz accelerators for proton and carbon therapy: the cyclinacs

lundi 16 avril 2007 14:00 (30 minutes)

Since many years the TERA Foundation is working on “cyclinacs”, novel accelerators which produces a beam particularly suited for the many paintings spot-scanning technique of moving tumour targets. Indeed the beam from a cyclinac has repetition rates in the range 200-400 Hz, as necessary for painting many times the target, while the energy and the charge delivered to the next voxel can be chosen electronically (i.e. without moving absorbers), as needed for spot-scanning with fast transverse and longitudinal feedback corrections. After explaining the working principle of a cyclinac and the prototype work done on a 3 GHz linac for protons and carbon ions, two projects will be described: IDRA and CABOTO. They are based on (i) a 30 MeV proton cyclotron, used also to produce radioisotopes for diagnostics and endoradiotherapy, and (ii) a 300 MeV/u carbon ion cyclotron, which is used for the protontherapy of deep seated tumours.

Auteur principal: Dr AMALDI, Ugo (University of Milano Bicocca and TERA Foundation)

Orateur: Dr AMALDI, Ugo (University of Milano Bicocca and TERA Foundation)

Classification de Session: Working groups sessions

Classification de thématique: Afternoon working group session - 4th day

ID de Contribution: **28**

Type: **Oral presentation**

EMMA status

jeudi 12 avril 2007 09:00 (20 minutes)

Exhaustive description of the EMMA project.

Auteur principal: Dr BLISS, Neil (CCLRC)

Orateur: Dr BLISS, Neil (CCLRC)

Classification de Session: FFAG projects status and overview

Classification de thématique: FFAG projects status and review

ID de Contribution: 29

Type: **Oral presentation**

Meditations on End Fields

jeudi 12 avril 2007 15:00 (45 minutes)

I discuss some important considerations for end field representations. In particular, I consider transverse symmetries of the end fields, the use of vector potentials vs. scalar potentials, the use of Enge functions to represent the field, and the accuracy of the hard edge limit.

Auteur principal: Dr BERG, Joseph Scott (Brookhaven National Laboratory)

Orateur: Dr BERG, Joseph Scott (Brookhaven National Laboratory)

Classification de Session: Working groups sessions

Classification de thématique: Afternoon working group session - 1st day

ID de Contribution: 30

Type: **Oral presentation**

The EMMA Lattice

samedi 14 avril 2007 09:00 (20 minutes)

I begin by describing the purpose and goals for the EMMA lattice. I then describe the lattice parameters for the machine and how they are related to the machine goals.

Auteur principal: Dr BERG, Joseph Scott (Brookhaven National Laboratory)

Orateur: Dr BERG, Joseph Scott (Brookhaven National Laboratory)

Classification de Session: Muon and e-model EMMA

Classification de thématique: Muon and e-model for EMMA

ID de Contribution: 32

Type: **Oral presentation**

FFAG projects in Japan

jeudi 12 avril 2007 10:30 (50 minutes)

Auteur principal: Prof. MORI, Yoshiharu (Kyoto University, Research Reactor Institute)

Orateur: Prof. MORI, Yoshiharu (Kyoto University, Research Reactor Institute)

Classification de Session: FFAG projects status and overview

Classification de thématique: FFAG projects status and review

ID de Contribution: 33

Type: **Oral presentation**

RACCAM

jeudi 12 avril 2007 11:30 (20 minutes)

Auteur principal: Dr MÉOT, François (LPSC-CNRS)

Orateur: Dr MÉOT, François (LPSC-CNRS)

Classification de Session: FFAG projects status and overview

Classification de thématique: FFAG projects status and review

ID de Contribution: 34

Type: **Oral presentation**

Quadrupole asymmetric fringe field

jeudi 12 avril 2007 16:35 (40 minutes)

Auteur principal: Dr KOSCIELNIAK, Shane (TRIUMF)

Orateur: Dr KOSCIELNIAK, Shane (TRIUMF)

Classification de Session: Working groups sessions

Classification de thématique: Afternoon working group session - 1st day

ID de Contribution: 35

Type: **Oral presentation**

Potential of cyclotrons

jeudi 12 avril 2007 17:15 (40 minutes)

Auteur principal: Dr JOHO, Werner (PSI)

Orateur: Dr JOHO, Werner (PSI)

Classification de Session: Working groups sessions

Classification de thématique: Afternoon working group session - 1st day

ID de Contribution: 36

Type: **Oral presentation**

Frequency map analysis

samedi 14 avril 2007 09:30 (20 minutes)

Auteur principal: Dr NADOLSKI, laurent (Synchrotron Soleil)

Orateur: Dr NADOLSKI, laurent (Synchrotron Soleil)

Classification de Session: Muon and e-model EMMA

Classification de thématique: Muon and e-model for EMMA

ID de Contribution: 37

Type: **Oral presentation**

Magnet design for FFAG "Pumplet"

vendredi 13 avril 2007 14:00 (45 minutes)

Auteur principal: Prof. MARKS, Neil (CCLRC ASTeC)

Orateur: Prof. MARKS, Neil (CCLRC ASTeC)

Classification de Session: Working groups sessions

Classification de thématique: Afternoon working group session - 2nd day

ID de Contribution: 38

Type: **Oral presentation**

RACCAM magnet design

vendredi 13 avril 2007 11:00 (20 minutes)

Auteurs principaux: Dr NEUVÉGLISE, Damien (SIGMAPHI); M. PLANCHE, Thomas (SIGMAPHI)

Orateur: M. PLANCHE, Thomas (SIGMAPHI)

Classification de Session: Technology for FFAG accelerators

Classification de thématique: Technology for FFAG accelerators

ID de Contribution: 39

Type: **Oral presentation**

EMMA magnetic systems

vendredi 13 avril 2007 09:00 (20 minutes)

Auteur principal: SHEPHERD, Ben (CCLRC Daresbury Laboratory)

Orateur: SHEPHERD, Ben (CCLRC Daresbury Laboratory)

Classification de Session: Technology for FFAG accelerators

Classification de thématique: Technology for FFAG accelerators

ID de Contribution: 40

Type: **Oral presentation**

EMMA RF

vendredi 13 avril 2007 09:30 (20 minutes)

Auteur principal: M. BEARD, Carl (ASTeC, Daresbury Laboratory)

Orateur: M. BEARD, Carl (ASTeC, Daresbury Laboratory)

Classification de Session: Technology for FFAG accelerators

Classification de thématique: Technology for FFAG accelerators

ID de Contribution: 41

Type: **Oral presentation**

PRISM RF systems

vendredi 13 avril 2007 12:00 (20 minutes)

Auteur principal: Dr OHMORI, Chihiro (KEK)

Orateur: Dr OHMORI, Chihiro (KEK)

Classification de Session: Technology for FFAG accelerators

Classification de thématique: Technology for FFAG accelerators

ID de Contribution: 43

Type: **Oral presentation**

Cyclotrons vs FFAG

vendredi 13 avril 2007 16:15 (30 minutes)

Auteur principal: Dr PASTERNAK, Jaroslaw (LPSC-CNRS)

Orateur: Dr PASTERNAK, Jaroslaw (LPSC-CNRS)

Classification de Session: Working groups sessions

Classification de thématique: Afternoon working group session - 2nd day

ID de Contribution: 44

Type: **Oral presentation**

EMMA horizontal and vertical correctors study

samedi 14 avril 2007 10:00 (20 minutes)

Auteur principal: KELLIHER, David (CCLRC)

Orateur: KELLIHER, David (CCLRC)

Classification de Session: Muon and e-model EMMA

Classification de thématique: Muon and e-model for EMMA

ID de Contribution: 45

Type: **Oral presentation**

Muon and e-model EMMA: Dynamics study of scaling FFAGs

samedi 14 avril 2007 11:30 (20 minutes)

Auteur principal: Dr AKIRA, Sato (Osaka University)

Orateur: Dr AKIRA, Sato (Osaka University)

Classification de Session: Muon and e-model EMMA

Classification de thématique: Muon and e-model for EMMA

ID de Contribution: 46

Type: **Oral presentation**

Muon and e-model EMMA: Scaling FFAGs using Harmonic Number Jump acceleration

samedi 14 avril 2007 12:00 (20 minutes)

Auteur principal: Prof. MORI, Yoshiharu (Kyoto University, Research Reactor Institute)

Orateur: Prof. MORI, Yoshiharu (Kyoto University, Research Reactor Institute)

Classification de Session: Muon and e-model EMMA

Classification de thématique: Muon and e-model for EMMA

ID de Contribution: 47

Type: **Oral presentation**

Status and future of FFAGs at KURRI

lundi 16 avril 2007 14:30 (30 minutes)

Auteurs principaux: Dr UESUGI, Tomonori (Kyoto Univ. Research Reactor Institute); Prof. MORI, Yoshiharu (Kyoto University, Research Reactor Institute)

Orateurs: Dr UESUGI, Tomonori (Kyoto Univ. Research Reactor Institute); Prof. MORI, Yoshiharu (Kyoto University, Research Reactor Institute)

Classification de Session: Working groups sessions

Classification de thématique: Afternoon working group session - 4th day

ID de Contribution: 48

Type: **Oral presentation**

ERIT

mardi 17 avril 2007 11:00 (20 minutes)

Auteurs principaux: Dr OKABE, Kota (Research Reactor Institute, Kyoto University); Dr TANIGAKI, Minoru (Research Reactor Institute, Kyoto University); Prof. MORI, Yoshiharu (Kyoto University, Research Reactor Institute)

Orateurs: Dr OKABE, Kota (Research Reactor Institute, Kyoto University); Dr TANIGAKI, Minoru (Research Reactor Institute, Kyoto University); Prof. MORI, Yoshiharu (Kyoto University, Research Reactor Institute)

Classification de Session: Medical applications

Classification de thématique: Medical Applications

ID de Contribution: 49

Type: **Oral presentation**

Tracking studies of phase rotation using a scaling FFAG

*lundi 16 avril 2007 15:00 (30 minutes)***Auteur principal:** Dr KURUP, Ajit (Imperial College)**Orateur:** Dr KURUP, Ajit (Imperial College)**Classification de Session:** Working groups sessions**Classification de thématique:** Afternoon working group session - 4th day

ID de Contribution: 50

Type: **Oral presentation**

Comparison of hadrontherapy installation methods

lundi 16 avril 2007 16:00 (30 minutes)

Auteur principal: Dr MEOT, François (LPSC-CNRS)

Orateur: Dr MEOT, François (LPSC-CNRS)

Classification de Session: Working groups sessions

Classification de thématique: Afternoon working group session - 4th day

ID de Contribution: 51

Type: **Oral presentation**

Proton Acceleration - ADS - RIA: 10-MW NS-NL FFAG SNS

lundi 16 avril 2007 10:00 (20 minutes)

Auteur principal: Dr REES, Grahame (CCLRC)

Orateur: Dr REES, Grahame (CCLRC)

Classification de Session: Proton Acceleration - ADS - RIA

Classification de thématique: Proton acceleration for ADS

ID de Contribution: 52

Type: **Oral presentation**

Techniques from the cyclotron world to compute FFAG magnets ?

lundi 16 avril 2007 16:30 (30 minutes)

Auteur principal: M. BEECKMAN, William (Ion Beam Applications s.a. (IBA))

Orateur: M. BEECKMAN, William (Ion Beam Applications s.a. (IBA))

Classification de Session: Working groups sessions

Classification de thématique: Afternoon working group session - 4th day

ID de Contribution: 53

Type: **Oral presentation**

Medical specs for FFAG beams

mardi 17 avril 2007 09:00 (20 minutes)

Auteur principal: Dr BALOSSO, Jacques (Grenoble Hospital)

Orateur: Dr BALOSSO, Jacques (Grenoble Hospital)

Classification de Session: Medical applications

Classification de thématique: Medical Applications

ID de Contribution: 54

Type: **Oral presentation**

Cyclotron injection into medical FFAG

mardi 17 avril 2007 09:30 (20 minutes)

Auteurs principaux: Dr MANDRILLON, Jérôme (CAL-Médicyc-AIMA); Dr CONJAT, Mathieu (CAL-Médicyc-AIMA)

Orateurs: Dr MANDRILLON, Jérôme (CAL-Médicyc-AIMA); Dr CONJAT, Mathieu (CAL-Médicyc-AIMA)

Classification de Session: Medical applications

Classification de thématique: Medical Applications

ID de Contribution: 55

Type: **Oral presentation**

The MINA Project

vendredi 13 avril 2007 15:05 (30 minutes)

Auteur principal: Dr RUGGIERO, Alessandro G. (BNL)

Orateur: Dr RUGGIERO, Alessandro G. (BNL)

Classification de Session: Working groups sessions

Classification de thématique: Afternoon working group session - 2nd day