Management Milestones GSI 1992-1999

Directorate Structure (CERN-like, appointments also from outside GSI)

1992 Chairman: Prof. Hans. J. Specht (WGF)
Research: Prof. V. Metag (Giessen), since 1997 Prof. J. Kluge (Mainz)
Accelerators: Dr. Norbert Angert
Technical Infrastruture: Dr. W. von Rüden (CERN)
Administration: Dr. Helmut Zeitträger (KGF)
Scientific Secretary: Dr. K.D. Gross

Further Internationalization of GSI

1992 Change of language in the GSI Scientific Council from German to English

Much broader level of outside advice, accompanied by a further increase of mutual lab exchanges and internationalization of the users community

Cancer Therapy with Ion Beams (cover sheets below)

1993 **Project Proposal, May 1993**

„Errichtung einer experimentellen Strahlentherapie bei der GSI Darmstadt"
Radiologische Klinik der Universität Heidelberg,
GSI Darmstadt (Project lead), DKFZ Heidelberg

Successful *treatment of about 450 patients from 1997-2008 in the medical cave at the GSI synchrotron SIS18. Prerequisite around 2001 for the smooth approval procedure of the clinic machine in Heidelberg. There was hardly a happier hour in my professional life than after the first patient irradiation....*

1998 **Project Proposal, September 1998**

„Construction of a Clinical Therapy Facility for Cancer Treatment with Ion Beams „
Radiologische Klinik der Universität Heidelberg (Project lead),
GSI Darmstadt (Accelerator), DKFZ Heidelberg (Treatment planning)

*Clinical machine in Heidelberg (**HIT**) essentially built by GSI and inaugurated in November 2009. More than 3500 patients successfully treated by 2016*

Experiment ALICE at CERN

1994 Approval for Participation of GSI, including funding by GSI
Funding of the German Universitiy Groups by the BMFT

Experiment HADES at GSI

1994 Approval as **H**igh **A**cceptance **D**i-**E**lectron **S**pectrometer

Unusually long delays in construction. Quite successful in topics of hadron production (in particular strangeness), but results on di-electrons not yet up to orginal expectations (status 2016)

Long-Term Future of GSI

1996 **Installation of 9 Working Groups with European Participation**
(Pre-NUPECC, with a mixture of low- and high-energy physicists as independent advisors)

- Deep-inelastic electron-nucleon and electron-nucleus scattering
- X-ray spectroscopy and radiation physics
- Nuclear collisions at maximum baryon density
- Physics of secondary beams
- Nuclear structure with radioactive beams
- Plasma physics with heavy ion beams
- Accelerator studies (electron-nucleon/nucleus collider)
- Accelerator studies (high-intensity option)
- High Power Lasers at GSI

1999 **A Long-Range Plan for an Upgrade of the GSI Facilities**
(Status Report for the Scientific Council of GSI, May 1999; not public)

Spirit of the recommendations after a 3 years' discussion period (citations): Heavy ion beams as the continued backbone of any future program, with very high beam intensities rather than much higher energies; in line with the best tradition of the laboratory, ensuring uniqueness on a world-wide scale also in the longer run; present proposal so far abstained from 'foreign terrain', i.e leptonic and hadronic probes (groups 1 and 4, resp.): the first was transferred to DESY (joint workshop 1997 in Seeheim), the second (primarily antiprotons) was being discussed by a community outside GSI, mostly former LEAR users, and subject to their own separate document

Concrete proposal in 2 phases, addressing the topics of all other groups: (1) new fragment separator; intermediate collector ring with stochastic cooling; much improved ESR with electron cooling; new electron storage ring (filled by a new 100 MeV electron linac) for a colliding mode with fragments in the ESR; net luminosity gain of the new fragmentation and storage ring facility a factor of about 100. (2) new 50 Tm synchrotron in combination with a new 18 Tm accumulator ring to get the full benefits of (1) together with strong further luminosity increases

High-Power Laser at GSI (cover sheet below)

1998 **PHELIX** - **P**etawatt **H**igh-**E**nergy **L**aser for Heavy-**I**on E**X**periments

A Kilojoule, Petawatt Laser at GSI, offering stand-alone possibilities among the leading European facilities, but with the combination of high-current heavy-ion beams and intense laser beams world-wide unique synergies for basic issues in nuclear, atomic and plasma physics, apart from direct relevance for applied physics topics like inertial confinement fusion

Highly successful and in great demand by a large users community

GSI dkfz

Einrichtung einer experimentellen Strahlentherapie
bei der
Gesellschaft für Schwerionenforschung
Darmstadt

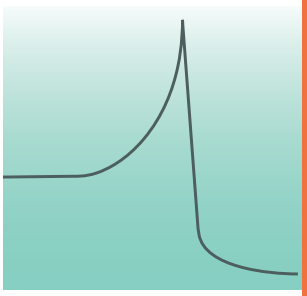
Radiologische Klinik der Universität
Heidelberg

Gesellschaft für Schwerionenforschung
Darmstadt

Deutsches Krebsforschungszentrum
Heidelberg

GSI-Report 93-23 Mai 1993 ISSN 01714546

Errichtung einer klinischen Therapieanlage zur Krebsbehandlung mit Ionenstrahlen



Radiologische Universitätsklinik Heidelberg

dkfz
Deutsches Krebsforschungszentrum Heidelberg

GSI
Gesellschaft für Schwerionenforschung Darmstadt

GSI-98-10
REPORT
DECEMBER 1998

PHELIX

Petawatt High-Energy Laser for Heavy-Ion EXperiments

GSI

GESELLSCHAFT FÜR SCHWERIONENFORSCHUNG, DARMSTADT