MC group meeting - 17. March 09

Announcements

Program for MC group

- Systematic attempt for tuning of MC generators (for experiments)
  - determine PDF4MC (for standard MCs and kt-factorization), using HERA data on F2, F2c and DIS jets etc
  - validate/x-check parton showering in MCs: are multijets in DGLAP/BFKL region appropriately described. Check energy flow and particle spectra.
  - validate/tune Tevatron measurements on W/Z, multijets, heavy-quarks, particle spectra etc for UE/MPI
- Phenomenology on parton showers
  - PS week, validate different PS against resummation, etc
- Phenomenology on UE/MPI
  - Systematic review of experimental evidence for MPI
  - Systematic review and predictions of non-MPI approaches including higher order calculations
  - Systematic investigations of uncertainties coming from PDFs, Parton Shower, Hadronziation etc
  - Attempts for MPI: is it a soft or hard process

Request to experiments

- What are the needs of ATLAS/CMS/H1/ZEUS ?
- Which of the topics are of interest ?
- Which of the topics can be worked on by whom ?

Monte Carlo position announced

MONTE CARLO .

DESY, Hamburg location, is seeking:

Physicist Ph.D. (m/f)

DESY

DESY is one of the leading accelerator centres worldwide. The Laboratory's main research areas comprise a broad program of photon science, including construction, operation and use of synchrotron-light sources and of X-ray lasers, and research in elementary particle and astroparticle physics.

The Analysis Centre of the Helmholtz Alliance "Physics at the Terascale" at DESY supports German physicists working on analysis at ATLAS, CMS and ILC in areas like Monte Carlo generators, parton distribution functions and statistics tools. The Monte Carlo group is a major activity of the Analysis Centre. The group consists of theoretical and experimental physicists working on all aspects of MC generators. The group supports validation and tuning of existing Monte Carlo event generators. It also organizes schools, tutorials and discussion days on MC issues.

The position

The successful candidate is expected to actively contribute to and shape these areas. He or she is expected to be active in the tuning and validation of existing Monte Carlo event generators. Therefore, experience in tuning and validation in either pp and/or ep environments is considered an advantage. A close collaboration with the experiment is necessary. The candidate is also expected to carry out research within one of the Alliance projects for about 50% of his or her time, preferably within one of the LHC experiments.

Requirements

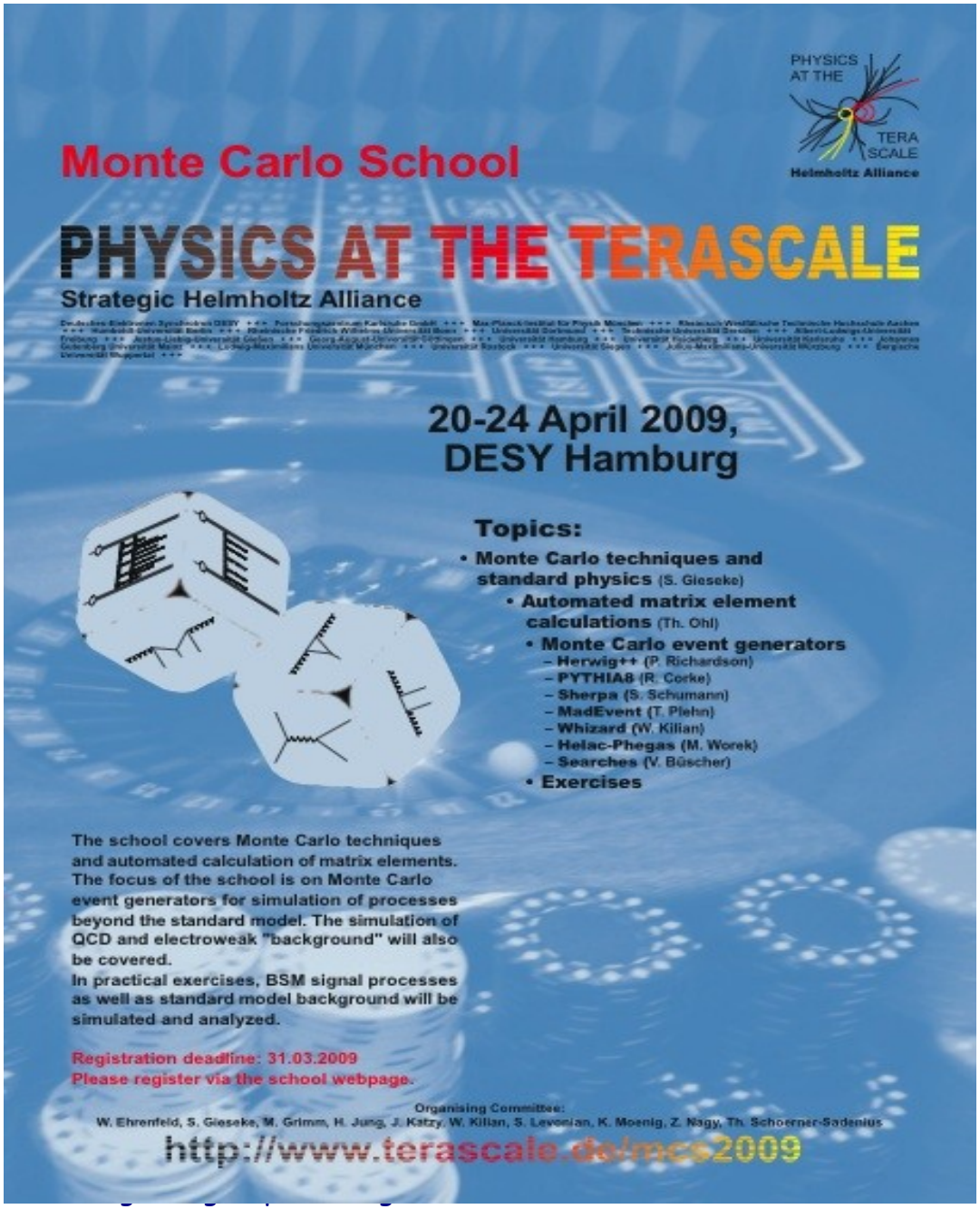
- Ph.D. in physics
- Interest and experience with Monte Carlo event generators, especially with their tuning and validation
- Good communication skills

For further information please do not hesitate to contact Thomas Schoerner-Sadenius (thomas.schoerner@desy.de), Judith Katzy (judith.katzy@desy.de) or Hannes Jung (hannes.jung@desy.de).

- Announcement is out
- Deadline is end of April

  NOT end of March

Monte Carlo school 2009



- Registration is open
- Please register
- We have already 32 registrations .... hm ...
- publish school lectures on Itunes – U:
  - who can help, who is interested ?
  - who can make a nice layout and logo ?

MC school of MCnet

2009 MCnet Summer School on the Physics and Techniques of Event
Generators in Lund, Sweden 1 - 4 July.

The school will provide a four day course of training in the physics and techniques used in modern Monte Carlo event generators via a series of lectures and practical sessions. The school is aimed at advanced doctoral students and young postdocs.

The school will be based around a core lecture series on event generator physics to be given by Frank Krauss. The theme of the rest
of the programme will be heavy quarks and jets. There will be lectures
on the general theory of heavy quark production by Eric Laenen, and special lectures on the top quark mass by Andre Hoang and jet def nitions by Matteo Cacciari. There will also be lectures by Paolo Nason on matrix element/parton shower matching techniques. Furthermore
there will be presentations by students who have been involved in the
MCnet program of short-term fellowships, and there will be a special lecture by Carsten Peterson on the use of Monte Carlo techniques in Biophysics.

Further details including application procedures can be found at:

http://www.montecarlonet.org/LundSchool

Local Organizing committee:
Hendrik Hoeth, Leif Lönnblad, Torbjorn Sjöstrand.

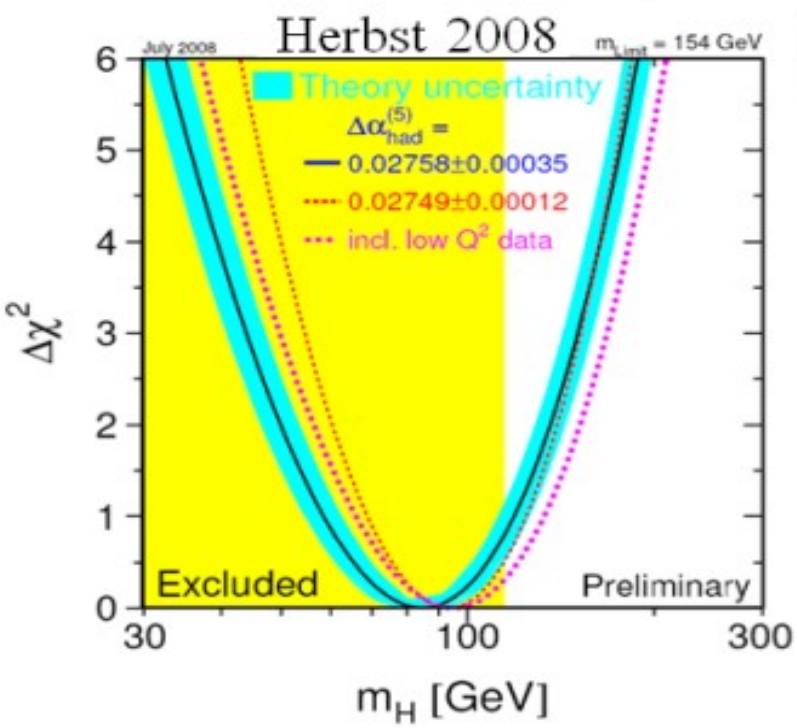
Some comments to DPG meeting

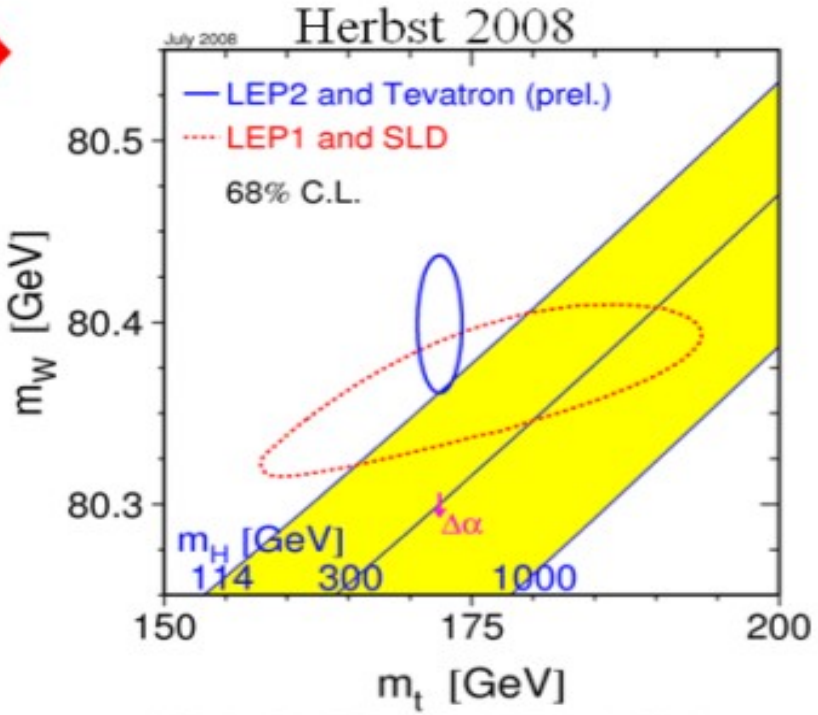
- Need the talks in english
- Need transparencies on web
- Need to show more presence from DESY and anacenter

Some highlights after DPG

Top Quark Masse und SM Higgs

$\Delta m_W \propto m_t^2$ $\quad$ $\Delta m_W \underset{H}{\propto} \ln m_H^2$



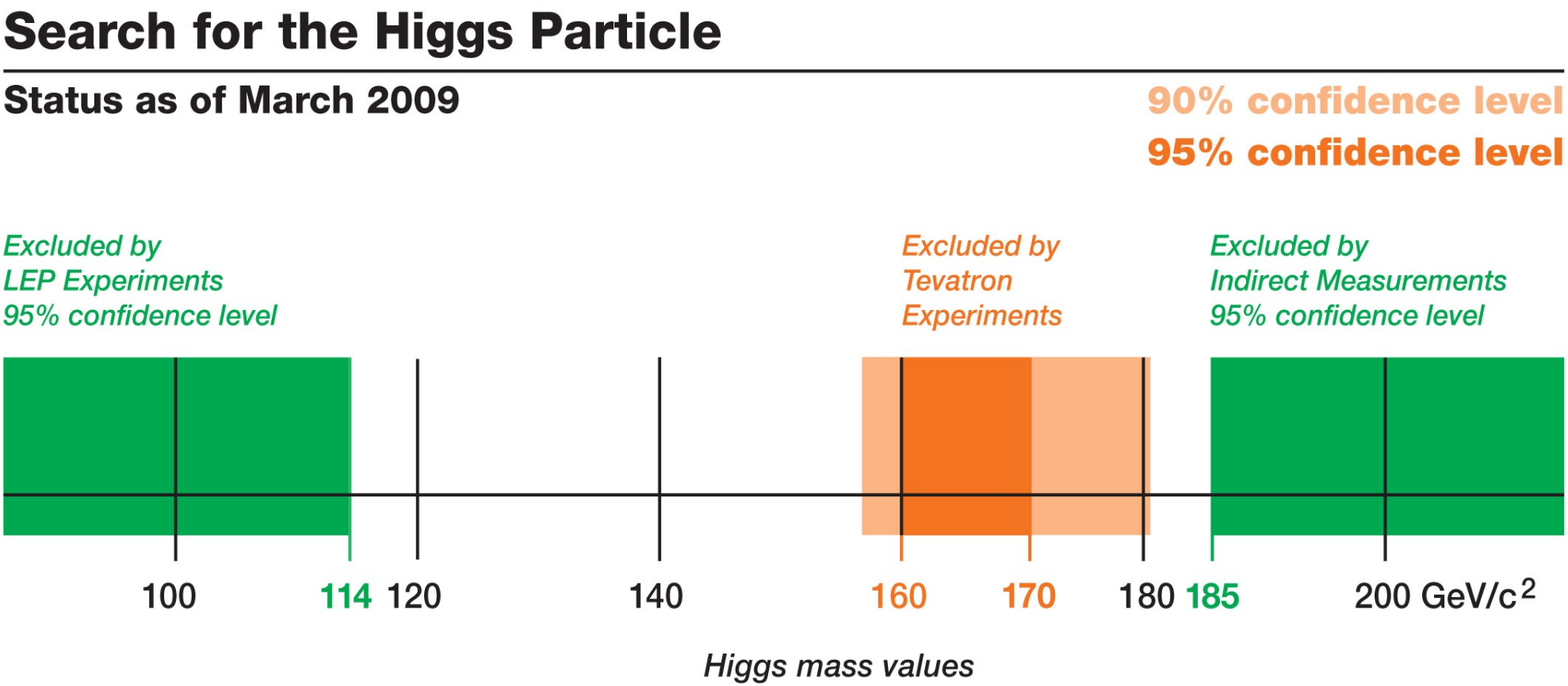


bevorzugte m_H : 84^{+34}_{-26} GeV

$m_H < 154$ GeV @ 95% C.L.

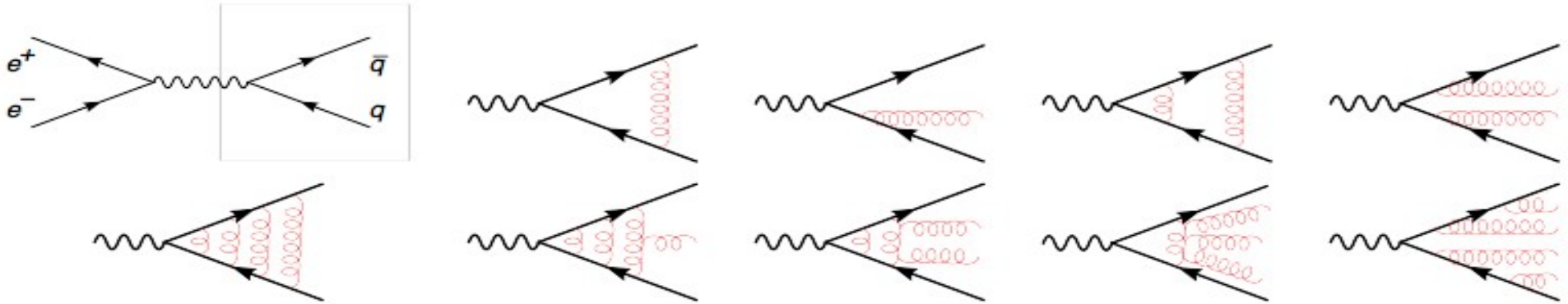
$m_H < 185$ GeV @ 95% C.L.(+LEP)

Tevatron Press release 13.March



Some highlights from DPG

$$\sigma_{\text{tot}}(e^+e^- \to \textbf{Hadronen})$$



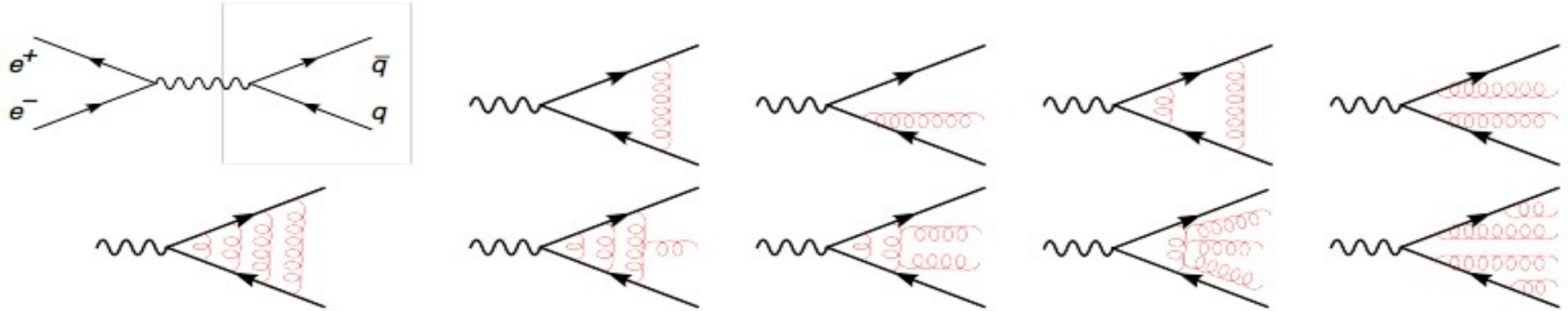
$$R(s) = \frac{\sigma_{\text{tot}}(e^+e^- \to \textbf{Hadronen})}{\sigma(e^+e^- \to \mu^+\mu^-)}$$

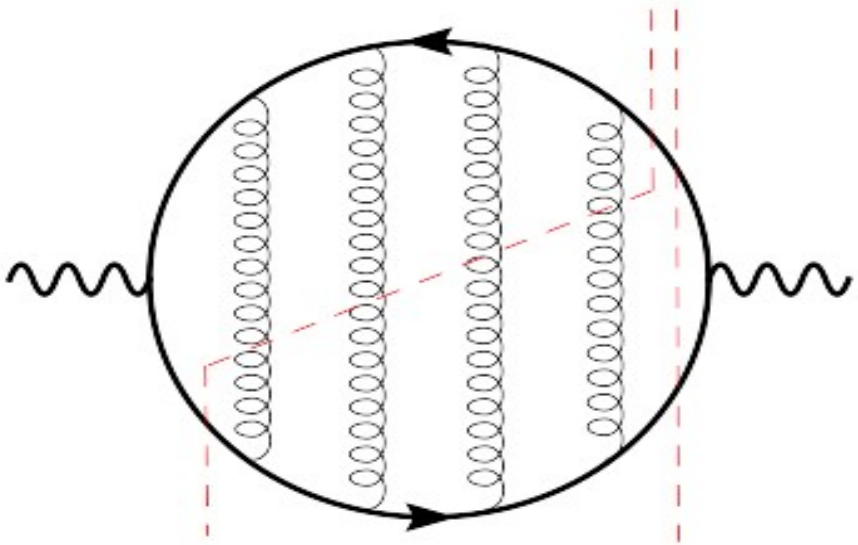
$$R = 3\sum_f Q_f^2 \left\{ 1 + \frac{\alpha_s}{\pi} + 1.4097 \left(\frac{\alpha_s}{\pi}\right)^2 - 12.7671 \left(\frac{\alpha_s}{\pi}\right)^3 - 80.0075 \left(\frac{\alpha_s}{\pi}\right)^4 \right\}$$

[Baikov,Chetyrkin,Kühn'08]

Some highlights from DPG

$$\sigma_{\text{tot}}(e^+e^- \to \textbf{Hadronen})$$





- optisches Theorem
- „masselose 2-Punkt-Integrale“
- mehrere Millionen Integrale
- Speicherplatzbedarf: $\approx$ 2 TByte
  [LHC: 8 000 TByte/Jahr]
- CPU-Zeit: $\mathcal{O}$(Jahre)
- Parallele Computeralgebra:
  `ParFORM`

AOB

- Meeting date