Curriculum Vitae

Daniela Bauer

Date of Birth :	05 March 1972
Address :	Indiana University MS 352 Fermilab Batavia, IL 60510, USA
Telephone :	+1-630-840-3859
E-Mail :	dbauer@fnal.gov

University Education

1999 - 2002	Ph.D. in High Energy Physics at Imperial College, London. Thesis: *A study of $B_s^0 \to J/\psi\ \phi$ in the DØ experiment and an example of HEP technology transfer.*
1995 - 1998	Diploma in physics, Technische Unversität Dresden, Germany. Thesis: *Monte-Carlo Studies on the measurement of $B^0 \to D^{*-} l^+ \nu$ using the BaBar detector.*
April 1995	Changed to TU Dresden after passing my intermediate exams (Vordiplom) at Albert-Ludwigs-Universität Freiburg.
1992 - 1995	Studies in physics at Albert-Ludwigs-Universität Freiburg, Germany.

Employment History

01/2003 - today	Research Associate, Physics Department, Indiana University.
10/2002 - 12/2002	Research Associate, Imperial College, London.

Research

I became interested in b-physics during my undergraduate degree in Germany, when I did a Monte Carlo study on $B^0 \to D^{*-} l^+ \nu$ in preparation for data taking at the BaBar detector.
When I joined DØ in 1999 I started working on the reconstruction of $B_s \to J/\psi\ \phi$. This decay is particularly interesting as its angular distributions allow the separation of its long and shortlived CP eigenstates. As DØ was still being upgraded at the time, these studies were again Monte Carlo based. One of the main findings of this study was that I showed that the EvtGen event generator I imported from the BaBar experiment into the DØ software framework simulated this decay much better than the event generator DØ was using at the time. The b-physics group now uses EvtGen to simulate almost all of its b-decays.

After I graduated from Imperial College, I joined the High Energy Physics Group at Indiana University. IU has a long tradition in quarkonium studies and I joined the effort to measure the $\Upsilon(1S)$ cross section in the channel $\Upsilon(1S) \rightarrow \mu\mu$. I took a leading role in the analysis by determining trigger and reconstruction efficiencies and developing a fitting procedure to extract the signal, as DØ is not able to separate the Υ resonances. Additionally I undertook the day-to-day supervision of the graduate student working on this analysis. The results, which cover a much larger rapidity spectrum than previous measurements, were published in Physics Review Letters and can be used as input to various quarkonium production models.

During my PhD and in my current position I have been involved with the DØ Level 3 trigger system. The DØ trigger system consists of three levels to reduce the initial event rate of 1.7 MHz to 50 Hz which are then written to tape. The third and final trigger level is a pure software trigger running on a linux farm, which performs a partial reconstruction of the event. During my PhD I worked on clustering in the Silicon Microstrip Tracker, using Monte Carlo and data gained from cosmic rays to evaluate the code. After I joined Indiana University, I became responsible for the Level 3 muon filter code. Problems with the existing the code prevented it from being used by the majority of triggers and it had to be updated to integrate new hardware that was installed in 2003. After solving the problems at hand and reducing the CPU consumption by 50 % to be able to run at high luminosities, this tool is now being used by almost all physics groups. A monitoring program I developed is used to determine its resolution and turn-on curves.

Since June 2005, I am one of the two conveners of the Level 3 trigger group. Together with my co-convener I manage the Level 3 trigger project and supervise students working on its sub-components. I coordinate the weekly releases and trouble-shoot any problems for which an immediate cause can not be identified. Upon becoming convener I identified the lack of coordination between the Level 3 software developers and the people maintaining the Level 3 trigger linux farms as a major problem. Since then I have been working closely with them to ensure a smooth transition of the trigger software that is being developed elsewhere onto the online trigger farms. As the DØ detector is again being upgraded, ensuring the trigger is ready to handle the new hardware and increased luminosities has now become on of my highest priorities.

I use both my experience with triggers and b-physics as the b-physics trigger representative. I develop new triggers using available tools, monitor the performance of current triggers, their rates and prescales and negotiate the b-physics trigger quotas in the trigger board. I also assist the members of the b-physics group with trigger related problems, including those relating to trigger simulations.

Publications

Since I joint DØ the experiment has published 20 papers on Run II data and a further nine have been accepted for publication. I am one of the main authors of *Measurement of inclusive differential cross sections for* $\Upsilon(1S)$ *production in* $p\bar{p}$ *collisions at* $\sqrt{s}$ *= 1.96 TeV*, Phys. Rev. Lett.{94}, 232001 (2005).

I am a member of the Editorial Board reviewing lifetime measurements with a J/ψ in the final state. The following papers reviewed by this Editorial Board have been

published or have been accepted for publication:
Measurement of the B_s^0 Lifetime in the Exclusive Decay Channel $B_s^0 \rightarrow J/\psi\phi$, Phys. Rev. Lett. {94}, 042001 (2005); *Measurement of the Λ_b Lifetime in the Decay $\Lambda_b \rightarrow J/\psi\Lambda$ with the D0 Detector* Phys. Rev. Lett. {94}, 102001 (2005); *Measurement of the lifetime difference in the B_s system*, hep-ex/0507084.

Invited talks - on behalf of the DØ Collaboration

Beauty2005, Assisi, Italy, June 2005: *b-quark and Υ production at the Tevatron.*
International Symposium on Multiparticle Dynamics 2004, Sonoma, USA, July 2004: *Top and b-physics results from the Tevatron.*
Hadron Collider Physics 2002, Karlsruhe, Germany, September 2002: *Heavy Flavour Production at DØ.*

Schools

I attended the Rutherford Appleton Laboratory Summer School for Young High Energy Physicists in 1999 and DESY Summer School in 1996.

Computing skills

I have six years experience programming in C++ and with the analysis software ROOT. I am familiar with the Linux and Windows operating systems and help maintaining the IU linux machines at DØ. I have also gained experience with the Pythia/Jetset and EvtGen event generators and the analysis program PAW.

Languages

My mother tongue is German and I am fluent in English.