

# Dr. Manoj Kumar Jha

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## EDUCATION

- **University of Delhi**, Department of Physics & Astrophysics, Delhi, India, **Ph.D.** in Experimental Particle Physics, March 2007  
**Thesis:** Tests of QCD in p-p Interactions at 14 TeV.  
**Advisor:** Professor Ram K. Shivpuri
- **University of Delhi**, Department of Physics & Astrophysics, Delhi, India.  
**Master of Science (Physics):** 1998-2000, First Division.
- **University of Delhi**, Delhi, India, **Bachelor of Science, Physics (Hons):** 1995-98, First Division.

## HONOURS, AWARDS, FELLOWSHIP

- **CERN Associated Member** working for ATLAS experiment from September 2009 - present.
- **INFN Post Doctoral Fellow** at Bologna “in the CDF experiment at Fermilab” from September 2007 - August 2009.
- **Visiting Scientist** at “Fermilab, Batavia, USA” to collaborate on the CMS physics and simulation from October 2006 - June 2007.
- **Scientist** at “Center for Detector & Related Software Technology (CDRST), Department of Physics, University of Delhi”, on the project “Search for new particles at Large Hadron Collider at CERN, GENEVA”, June 2005 - June 2007.
- **Senior Research Fellow**, Council of Scientific and Industrial Research (CSIR), Govt. of India, July 2002 - May 2005.
- **Junior Research Fellow**, CSIR, Govt. of India, July 2000 - June 2002.

- Awarded University Grant Commission, **National Scholarship at the Centre of Advance Studies**, Department of Physics & Astrophysics, University of Delhi, 1998 - 2000.

## RESEARCH FIELDS

Grid Computing and Experimental High Energy Physics.

### Grid Computing

#### *ATLAS Experiment*

Ganga is a computational task-management tool, which allows for the specification, submission, bookkeeping and post-processing of computational tasks on a wide set of distributed resources. Ganga has been developed to solve a problem increasingly common in scientific projects, which is that researchers must regularly switch between different processing systems, each with its own command set, to complete their computational tasks. Ganga provides a homogeneous environment for processing data on heterogeneous resources.

A robust and scalable framework (GangaRobot) is needed for automated testing of grid sites. GangaRobot will use Ganga to submit jobs. Results from GangaRobot tests are to be used by Ganga to improve job placement. Following are the features which will be implemented in GangaRobot:

- Allow tests to be scheduled in advance, and set up to repeat at specified intervals.
- Store details about and results of tests.
- Report the results of tests in a variety of ways, including reporting to SAM and producing files that impact how Ganga places jobs.
- Scale to many types of tests on many sites.

Presently, I am taking the lead role in developing and integrating GangaRobot into the grid submission tool Ganga.

#### *CDF Experiment*

I worked for the CDF experiment in the offline computing group. Since CDF has recently changed and improved its computing model, decentralizing some parts of it in order to be able to exploit the rising number of distributed resources available

nowadays. Despite those efforts, while the large majority of CDF Monte Carlo production has moved to the Grid, data processing is still mainly performed in dedicated farms hosted at FNAL, requiring a centralized management of data and Monte Carlo samples needed for physics analysis. This rises the question on how to manage the transfer of produced Monte Carlo samples from remote Grid sites to FNAL in an efficient way; up to now CDF has relied on a non scalable centralized solution based on dedicated data servers accessed through rcp protocol, which has proven to be unsatisfactory.

I proposed a new data transfer model that uses SRMs as local caches for remote Monte Carlo production sites, interfaces them with SAM, the experiment data catalog, and finally realizes the file movement exploiting the features provided by the catalog data transfer layer. **Presented in CHEP, 21 – 27<sup>th</sup> March, 2009, Prague.**

### *CMS Experiment*

I graduated on CMS in 2007. I conducted the Simulation Workshop for CMS 16th-24th Feb., 2004, held at the Center for Detector and Related Software Technology, University of Delhi, India. The participants included post-doctoral fellows, graduate students, system managers and software experts from Tata Institute of Fundamental Research (TIFR) Mumbai, Panjab University & Delhi University. The participants learnt the installation of CMS software and their use in physics analysis. I was the system administrator of Delhi group during my graduation days.

I was the member of **LHC Physics Center(LPC)** monte carlo production group at Fermilab when CMS was taking transition from CMS Object Oriented (CMSOO) to CMSSW. It was my responsibility to avail the fully simulated MC samples to the LPC members on time. The MC sample were used for validation of the new releases of CMSSW.

## **Physics Analysis**

In CMS, I worked on performance of jet algorithms in comparison to Seedless Infrared-Safe Cone (SISCone). We proposed that SISCone be adopted as the default cone based jet clustering algorithm for CMS (**Published in CMS AN 2008/02**). Under search for new phenomena, I studied CMS sensitivity to quark contact interactions in the dijet final state using the new CMS software framework for simulation and reconstruction (CMSSW). My analysis demonstrates that the present Tevatron limit on quark compositeness will be crossed only with  $10 \text{ pb}^{-1}$  of data (**Published in J. Phys. G36:015004,2009**).

After my graduation, I got an opportunity to work on real data for CDF experiment. I am using the ratio of x-section of dijets to search for quark compositeness at Tevatron energy (**Presented in APS April 2009, Denver, USA**). Our group has considerable experience in extracting physics from minimum bias data. I am

also evaluating the contribution of heavy flavor hadrons especially from bottom and charm quarks in the minimum bias data. The present HF tagger algorithm is not suited for minimum bias data due to presence of very low  $P_T$  particles. I re-wrote the HF tagger algorithm for our case and found that the results are encouraging. This analysis is under progress now.

## TALKS/CONFERENCE/WORKSHOP/SCHOOL ATTENDED

### *Grid Related*

1. **Workshop on Computing in High Energy Physics (CHEP)**, held at Prague, Czech Republic, from 21<sup>st</sup> - 27<sup>th</sup> Mar., 2009.
2. **INFN Grid Computing School**, held at INFN Bologna, Italy from 6<sup>th</sup> to 9<sup>th</sup> Oct. 2008.
3. Talk on “**Monte Carlo Data Motion**” in CDF grid Workshop at Fermilab on Jan. 14<sup>th</sup>, 2008.
4. **Workshop on Computing in High Energy Physics (CHEP)**, held at Tata Institute of Fundamental Research, Mumbai from 13<sup>th</sup> - 17<sup>th</sup> Feb., 2006.
5. **Conducted Simulation Workshop for CMS**, 16<sup>th</sup> – 24<sup>th</sup> Feb. - 2004, held at University of Delhi, Delhi, India.
6. **Simulation Workshop for CMS**, 18<sup>th</sup> – 20<sup>th</sup> Feb. - 2002, held at Ooty, India.
7. **Workshop on CMS at LHC** held at Tata Institute of Fundamental Research (TIFR), Mumbai (Dec. 2000).

### *Physics Analysis*

1. “**The dijet mass spectrum and a search for quark compositeness at CDF.**” presented in APS Denver, Colorado, April 09.
2. “**Dijet Ratio Status**” in Early CMS Physics Workshop at Fermilab, from 8<sup>th</sup> to 9<sup>th</sup> June, 2007.
3. **CTEQ Summer School on QCD Analysis and Phenomenology**, held at University of Wisconsin, Madison from 30<sup>th</sup> May - 7<sup>th</sup> June, 2007.
4. “**Dijet Ratio from QCD and Contact Interactions**” in combined QCD and SUSY/BSM working group, at Fermilab, on 18<sup>th</sup> May, 2007.

5. “**Study of jets in W + jets**” in in LPC physics group at Fermilab, on 11<sup>th</sup> Jan. 2007.
6. “**Optimization of Transverse Shaping of Lead Absorber in the CMS Preshower**” in CMS Week at CERN from 14<sup>th</sup> to 30<sup>th</sup> March, 2005.
7. “**Direct Photon Production at The LHC**” India-CMS Collaboration Meeting held on 25<sup>th</sup> Jan, 2002 at Panjab University, Chandigarh.
8. “**Inclusive Jet Cross-Section at 1.8 TeV (DZero)**” in India-CMS Collaboration Meeting held on 20<sup>th</sup> March, 2003 at Delhi University, Delhi.

## REFERENCES

- Dr. Franco Rimondi  
Professor of Physics  
INFN Bologna, Italy  
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- Dr. Rick Snider  
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- Dr. Donatella Lucchesi  
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## LIST OF PUBLICATIONS

### *Grid Related*

1. “A new CDF model for data movement based on SRM”, Manoj Kumar Jha, ..., Doug Benjamin, Accepted in **Journal of Physics: Conference Series, CHEP309**.

### *Physics Analysis*

1. “Search for charged Higgs bosons in decays of top quarks in  $p - \bar{p}$  collisions at  $\sqrt{s} = 1.96$  TeV”  
T. Aaltonen, ..., M.K. Jha, *et al.* [CDF Collaboration]  
Phys. Rev. Lett. **103**, 101803 (2009) [arXiv:0907.1269 [hep-ex]]
2. “Searching the Inclusive Lepton + Photon + Missing ET + b-quark Signature for Radiative Top Quark Decay and Non-Standard-Model Processes”  
T. Aaltonen, ..., M.K. Jha, *et al.* [CDF Collaboration]  
Phys. Rev. D **80**, 011102 (2009) [arXiv:0906.0518 [hep-ex]]
3. “Search for a Higgs Boson in  $WH \rightarrow \ell\nu b\bar{b}$  in  $p\bar{p}$  Collisions at  $\sqrt{s} = 1.96$  TeV”  
T. Aaltonen, ..., M.K. Jha, *et al.* [CDF Collaboration]  
Phys. Rev. Lett. **103**, 101802 (2009) [arXiv:0906.5613 [hep-ex]]
4. “Search for the Neutral Current Top Quark Decay  $t \rightarrow Zc$  Using the Ratio of Z-Boson + 4 Jets to W-Boson + 4 Jets Production”  
T. Aaltonen, ..., M.K. Jha, *et al.* [CDF Collaboration]  
Phys. Rev. D **80**, 052001 (2009) [arXiv:0905.0277 [hep-ex]]
5. “Search for a Fermiophobic Higgs Boson Decaying into Diphotons in  $p - \bar{p}$  Collisions at  $\sqrt{s} = 1.96$  TeV”  
T. Aaltonen, ..., M.K. Jha, *et al.* [CDF Collaboration]  
Phys. Rev. Lett. **103**, 061803 (2009) [arXiv:0905.0413 [hep-ex]]
6. “Production of  $\psi(2S)$  Mesons in  $p\bar{p}$  Collisions at 1.96 TeV”  
T. Aaltonen, ..., M.K. Jha, *et al.* [CDF Collaboration]  
Phys. Rev. D **80**, 031103 (2009) [arXiv:0905.1982 [hep-ex]]
7. “Search for Standard Model Higgs Boson Production in Association with a W Boson using a Neural Network”  
T. Aaltonen, ..., M.K. Jha, *et al.* [CDF Collaboration]  
Phys. Rev. D **80**, 012002 (2009) [arXiv:0905.3155 [hep-ex]]

8. **“First Observation of Vector Boson Pairs in a Hadronic Final State at the Tevatron Collider”**  
T. Aaltonen, ..., **M.K. Jha**, *et al.* [CDF Collaboration]  
Phys. Rev. Lett. **103**, 091803 (2009) [arXiv:0905.4714 [hep-ex]]
9. **“Measurement of Particle Production and Inclusive Differential Cross Sections in  $p\bar{p}$  Collisions at  $\sqrt{s} = 1.96$  TeV”**  
T. Aaltonen, ..., **M.K. Jha**, *et al.* [CDF Collaboration]  
Phys. Rev. D **79**, 112005 (2009) [arXiv:0904.1098 [hep-ex]]
10. **“Search for WW and WZ production in lepton plus jets final state at CDF”**  
T. Aaltonen, ..., **M.K. Jha**, *et al.* [CDF Collaboration]  
Phys. Rev. D **79**, 112011 (2009) [arXiv:0903.0814 [hep-ex]]
11. **“First Observation of Electroweak Single Top Quark Production”**  
T. Aaltonen, ..., **M.K. Jha**, *et al.* [CDF Collaboration]  
Phys. Rev. Lett. **103**, 092002 (2009) [arXiv:0903.0885 [hep-ex]]
12. **“Search for narrow resonances lighter than  $\Upsilon$  mesons”**  
T. Aaltonen, ..., **M.K. Jha**, *et al.* [CDF Collaboration]  
Eur. Phys. J. C **62**, 319 (2009) [arXiv:0903.2060 [hep-ex]]
13. **“Evidence for a Narrow Near-Threshold Structure in the  $J/\psi\phi$  Mass Spectrum in  $B^+ \rightarrow J/\psi\phi K^+$  Decays”**  
T. Aaltonen, ..., **M.K. Jha**, *et al.* [CDF Collaboration]  
Phys. Rev. Lett. **102**, 242002 (2009) [arXiv:0903.2229 [hep-ex]]
14. **“Measurement of the b-Hadron Production Cross Section Using Decays to  $mu^- D^0 X$  Final States in ppbar Collisions at sqrt s = 1.96 TeV”**  
T. Aaltonen, ..., **M.K. Jha**, *et al.* [CDF Collaboration]  
Phys. Rev. D **79**, 092003 (2009) [arXiv:0903.2403 [hep-ex]]
15. **“Search for Gluino-Mediated Sbottom Production in  $p\bar{p}$  Collisions at  $\sqrt{s} = 1.96$  TeV”**  
T. Aaltonen, ..., **M.K. Jha**, *et al.* [CDF Collaboration]  
Phys. Rev. Lett. **102**, 221801 (2009) [arXiv:0903.2618 [hep-ex]]
16. **“First Measurement of the  $t\bar{t}$  Differential Cross Section  $d\sigma/dM_{t\bar{t}}$  in  $p\bar{p}$  Collisions at  $\sqrt{s} = 1.96$  TeV”**  
T. Aaltonen, ..., **M.K. Jha**, *et al.* [CDF Collaboration]  
Phys. Rev. Lett. **102**, 222003 (2009) [arXiv:0903.2850 [hep-ex]]

17. **“A Measurement of the t-tbar Cross Section in p-pbar Collisions at  $\sqrt{s} = 1.96$  TeV using Dilepton Events with a Lepton plus Track Selection”**  
T. Aaltonen, ..., **M.K. Jha**, *et al.* [CDF Collaboration]  
Phys. Rev. D **79**, 112007 (2009) [arXiv:0903.5263 [hep-ex]]
18. **“Search for Long-Lived Massive Charged Particles in 1.96 TeV  $p\bar{p}$  Collisions”**  
T. Aaltonen, ..., **M.K. Jha**, *et al.* [CDF Collaboration]  
Phys. Rev. Lett. **103**, 021802 (2009) [arXiv:0902.1266 [hep-ex]]
19. **“Observation of exclusive charmonium production and gamma+gamma to mu+mu- in p+pbar collisions at  $\sqrt{s} = 1.96$  TeV”**  
T. Aaltonen, ..., **M.K. Jha**, *et al.* [CDF Collaboration]  
Phys. Rev. Lett. **102**, 242001 (2009) [arXiv:0902.1271 [hep-ex]]
20. **“Search for exclusive Z boson production and observation of high mass  $p\bar{p} \rightarrow \gamma\gamma \rightarrow p + \ell\ell + \bar{p}$  events in  $p\bar{p}$  collisions at  $\sqrt{s} = 1.96$  TeV”**  
T. Aaltonen, ..., **M.K. Jha**, *et al.* [CDF Collaboration]  
Phys. Rev. Lett. **102**, 222002 (2009) [arXiv:0902.2816 [hep-ex]]
21. **“Search for the Production of Narrow tb Resonances in 1.9 fb-1 of ppbar Collisions at  $\sqrt{s} = 1.96$  TeV”**  
T. Aaltonen, ..., **M.K. Jha**, *et al.* [CDF Collaboration]  
Phys. Rev. Lett. **103**, 041801 (2009) [arXiv:0902.3276 [hep-ex]]
22. **“Direct Measurement of the W Production Charge Asymmetry in  $p\bar{p}$  Collisions at  $\sqrt{s} = 1.96$  TeV”**  
T. Aaltonen, ..., **M.K. Jha**, *et al.* [CDF Collaboration]  
Phys. Rev. Lett. **102**, 181801 (2009) [arXiv:0901.2169 [hep-ex]]
23. **“Search for the Decays B0(s)  $\rightarrow$  j e+ mu- and B0(s)  $\rightarrow$  j e+ e- in CDF Run. II”**  
T. Aaltonen, ..., **M.K. Jha**, *et al.* [CDF Collaboration]  
Phys. Rev. Lett. **102**, 201801 (2009) [arXiv:0901.3803 [hep-ex]]
24. **“Measurement of the  $t\bar{t}$  Production Cross Section in 2 fb<sup>-1</sup> of  $p\bar{p}$  Collisions at  $\sqrt{s} = 1.96$  TeV Using Lepton Plus Jets Events with Soft Muon b-Tagging”**  
T. Aaltonen, ..., **M.K. Jha**, *et al.* [CDF Collaboration]  
Phys. Rev. D **79**, 052007 (2009) [arXiv:0901.4142 [hep-ex]]
25. **“Search for top-quark production via flavor-changing neutral currents in W+1 jet events at CDF”**

- T. Aaltonen, ..., **M.K. Jha**, *et al.* [CDF Collaboration]  
Phys. Rev. Lett. **102**, 151801 (2009) [arXiv:0812.3400 [hep-ex]]
26. **“Search for new particles decaying into dijets in proton-antiproton collisions at  $\sqrt{s} = 1.96$  TeV”**  
T. Aaltonen, ..., **M.K. Jha**, *et al.* [CDF Collaboration]  
Phys. Rev. D **79**, 112002 (2009) [arXiv:0812.4036 [hep-ex]]
27. **“Observation of New Charmless Decays of Bottom Hadrons”**  
T. Aaltonen, ..., **M.K. Jha**, *et al.* [CDF Collaboration]  
Phys. Rev. Lett. **103**, 031801 (2009) [arXiv:0812.4271 [hep-ex]]
28. **“Top Quark Mass Measurement in the Lepton plus Jets Channel Using a Modified Matrix Element Method”**  
T. Aaltonen, ..., **M.K. Jha**, *et al.* [CDF Collaboration]  
Phys. Rev. D **79**, 072001 (2009) [arXiv:0812.4469 [hep-ex]]
29. **“A search for high-mass resonances decaying to dimuons at CDF”**  
T. Aaltonen, ..., **M.K. Jha**, *et al.* [CDF Collaboration]  
Phys. Rev. Lett. **102**, 091805 (2009) [arXiv:0811.0053 [hep-ex]]
30. **“Measurement of W-Boson Helicity Fractions in Top-Quark Decays Using  $\cos\theta^*$ ”**  
T. Aaltonen, ..., **M.K. Jha**, *et al.* [CDF Collaboration]  
Phys. Lett. B **674**, 160 (2009) [arXiv:0811.0344 [hep-ex]]
31. **“Inclusive Search for Squark and Gluino Production in  $p\bar{p}$  Collisions at  $\sqrt{s} = 1.96$ -TeV”**  
T. Aaltonen, ..., **M.K. Jha**, *et al.* [CDF Collaboration]  
Phys. Rev. Lett. **102**, 121801 (2009) [arXiv:0811.2512 [hep-ex]]
32. **“Measurement of the  $k_T$  Distribution of Particles in Jets Produced in  $p\bar{p}$  Collisions at  $\sqrt{s} = 1.96$ -TeV”**  
T. Aaltonen, ..., **M.K. Jha**, *et al.* [CDF Collaboration]  
Phys. Rev. Lett. **102**, 232002 (2009) [arXiv:0811.2820 [hep-ex]]
33. **“Search for High-Mass  $e^+e^-$  Resonances in  $p\bar{p}$  Collisions at  $\sqrt{s} = 1.96$ -TeV”**  
T. Aaltonen, ..., **M.K. Jha**, *et al.* [CDF Collaboration]  
Phys. Rev. Lett. **102**, 031801 (2009) [arXiv:0810.2059 [hep-ex]]
34. **“First Measurement of the Ratio of Branching Fractions  $B(\Lambda_b^0 \rightarrow \Lambda_c^+ \mu^- \bar{\nu}_\mu) / B(\Lambda_b^0 \rightarrow \Lambda_c^+ \pi^-)$ ”**  
T. Aaltonen, ..., **M.K. Jha**, *et al.* [CDF Collaboration]  
Phys. Rev. D **79**, 032001 (2009) [arXiv:0810.3213 [hep-ex]]

35. **“Search for new physics in the  $\mu\mu + e/\mu + \cancel{E}_T$  channel with a low- $p_T$  lepton threshold at the Collider Detector at Fermilab”**  
T. Aaltonen, ..., **M.K. Jha**, *et al.* [CDF Collaboration]  
Phys. Rev. D **79**, 052004 (2009) [arXiv:0810.3522 [hep-ex]]
36. **“Measurement of the Single Top Quark Production Cross Section at CDF”**  
T. Aaltonen, ..., **M.K. Jha**, *et al.* [CDF Collaboration]  
Phys. Rev. Lett. **101**, 252001 (2008) [arXiv:0809.2581 [hep-ex]]
37. **“Global Search for New Physics with 2.0/fb at CDF”**  
T. Aaltonen, ..., **M.K. Jha**, *et al.* [CDF Collaboration]  
Phys. Rev. D **79**, 011101 (2009) [arXiv:0809.3781 [hep-ex]]
38. **“Search for a Higgs Boson Decaying to Two  $W$  Bosons at CDF”**  
T. Aaltonen, ..., **M.K. Jha**, *et al.* [CDF Collaboration]  
Phys. Rev. Lett. **102**, 021802 (2009) [arXiv:0809.3930 [hep-ex]]
39. **“First simultaneous measurement of the top quark mass in the lepton + jets and dilepton channels at CDF”**  
T. Aaltonen, ..., **M.K. Jha**, *et al.* [CDF Collaboration]  
Phys. Rev. D **79**, 092005 (2009) [arXiv:0809.4808 [hep-ex]]
40. **“Measurement of Resonance Parameters of Orbitally Excited Narrow  $B^0$  Mesons”**  
T. Aaltonen, ..., **M.K. Jha**, *et al.* [CDF Collaboration]  
Phys. Rev. Lett. **102**, 102003 (2009) [arXiv:0809.5007 [hep-ex]]
41. **“First Direct Bound on the Total Width of the Top Quark in  $p\bar{p}$  Collisions at  $\sqrt{s} = 1.96$ -TeV”**  
T. Aaltonen, ..., **M.K. Jha**, *et al.* [CDF Collaboration]  
Phys. Rev. Lett. **102**, 042001 (2009) [arXiv:0808.2167 [hep-ex]]
42. **“Search for Supersymmetry in  $p\bar{p}$  Collisions at  $\sqrt{s} = 1.96$ -TeV Using the Trilepton Signature of Chargino-Neutralino Production”**  
T. Aaltonen, ..., **M.K. Jha**, *et al.* [CDF Collaboration]  
Phys. Rev. Lett. **101**, 251801 (2008) [arXiv:0808.2446 [hep-ex]]
43. **“Measurement of the Inclusive Jet Cross Section at the Fermilab Tevatron p-pbar Collider Using a Cone-Based Jet Algorithm”**  
T. Aaltonen, ..., **M.K. Jha**, *et al.* [CDF Collaboration]  
Phys. Rev. D **78**, 052006 (2008) [Erratum-ibid. D **79**, 119902 (2009)] [arXiv:0807.2204 [hep-ex]]

44. **“Search for large extra dimensions in final states containing one photon or jet and large missing transverse energy produced in  $p\bar{p}$  collisions at  $\sqrt{s} = 1.96\text{-TeV}$ ”**  
T. Aaltonen, ..., **M.K. Jha**, *et al.* [CDF Collaboration]  
Phys. Rev. Lett. **101**, 181602 (2008) [arXiv:0807.3132 [hep-ex]]
45. **“Measurement of the fraction of  $t\bar{t}$  production via gluon-gluon fusion in  $p\bar{p}$  collisions at  $\sqrt{s} = 1.96\text{-TeV}$ ”**  
T. Aaltonen, ..., **M.K. Jha**, *et al.* [CDF Collaboration]  
Phys. Rev. D **79**, 031101 (2009) [arXiv:0807.4262 [hep-ex]]
46. **“Search for the Higgs boson produced with  $Z \rightarrow \ell^+\ell^-$  in  $p\bar{p}$  collisions at  $\sqrt{s} = 1.96\text{ TeV}$ ”**  
T. Aaltonen, ..., **M.K. Jha**, *et al.* [CDF Collaboration]  
Phys. Rev. Lett. **101**, 251803 (2008) [arXiv:0807.4493 [hep-ex]]
47. **“Measurement of the top quark mass with dilepton events selected using neuroevolution at CDF”**  
T. Aaltonen, ..., **M.K. Jha**, *et al.* [CDF Collaboration]  
Phys. Rev. Lett. **102**, 152001 (2009) [arXiv:0807.4652 [hep-ex]]
48. **“CMS search plans and sensitivity to new physics with dijets”**  
A. Bhatti *et al.*  
J. Phys. G **36**, 015004 (2009) [arXiv:0807.4961 [hep-ex]]
49. **“Measurement of  $b$ -jet Shapes in Inclusive Jet Production in  $p\bar{p}$  Collisions at  $\sqrt{s} = 1.96\text{-TeV}$ ”**  
T. Aaltonen, ..., **M.K. Jha**, *et al.* [CDF Collaboration]  
Phys. Rev. D **78**, 072005 (2008) [arXiv:0806.1699 [hep-ex]]
50. **“Forward-Backward Asymmetry in Top Quark Production in  $p\bar{p}$  Collisions at  $\sqrt{s} = 1.96\text{ TeV}$ ”**  
T. Aaltonen, ..., **M.K. Jha**, *et al.* [CDF Collaboration]  
Phys. Rev. Lett. **101**, 202001 (2008) [arXiv:0806.2472 [hep-ex]]
51. **“Search for the Flavor Changing Neutral Current Decay  $t \rightarrow Zq$  in  $p\bar{p}$  Collisions at  $\sqrt{s} = 1.96$ ”**  
T. Aaltonen, ..., **M.K. Jha**, *et al.* [CDF Collaboration]  
Phys. Rev. Lett. **101**, 192002 (2008) [arXiv:0805.2109 [hep-ex]]
52. **“Search for the Rare Decays  $B^+ \rightarrow \mu^+\mu^-K^+$ ,  $B^0 \rightarrow \mu^+\mu^-K^{*0}(892)$ , and  $B_s^0 \rightarrow \mu^+\mu^-\phi$  at CDF”**  
T. Aaltonen, ..., **M.K. Jha**, *et al.* [CDF Collaboration]  
Phys. Rev. D **79**, 011104 (2009) [arXiv:0804.3908 [hep-ex]]

53. “**Simulation study of irradiated Si sensors equipped with metal-overhang for applications in LHC environment**”  
S. Chatterji *et al.*  
IEEE Trans. Nucl. Sci. **51**, 298 (2004)
54. “**High-voltage planar Si detectors for high-energy physics experiments: comparison between metal-overhang and field-limiting ring techniques**”, K. Ranjan, A. Bhardwaj, Namrata, S. Chatterji, A. K. Srivastava, Ashish Kumar, **Manoj Kumar Jha** and R. K. Shivpuri, **Solid State Electronics** **48**, 1587 (2004).
55. “**Breakdown voltage analysis of neutron irradiated silicon detectors**”, A. Bhardwaj, K. Ranjan, Namrata, S. Chatterji, A. K. Srivastava, A. Kumar, **M. K. Jha**, and R. K. Shivpuri, **Eur. Phys. J. AP.** **24**, 171(2003).
56. “**Study of parton kT smearing effects in direct photon production at the Fermilab Tevatron**”  
A. Kumar, K. Ranjan, M. K. Jha, A. Bhardwaj, B. M. Sodermark and R. K. Shivpuri  
Phys. Rev. D **68**, 014017 (2003)
57. “**Study of direct photon production at the CERN LHC**”  
A. Kumar, M. Kumar Jha, B. Mitra Sodermark, A. Bhardwaj, K. Ranjan and R. K. Shivpuri  
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### *Conference Notes*

1. “Projection of the annealing behaviour of irradiated Si sensors in the LHC environment”, S. Chatterji, Kirti Ranjan, Ashutosh Bhardwaj, Namrata, Ajay K. Srivastava, Ashish Kumar, **Manoj Kumar Jha**, Brajesh C. Choudhary, Pooja Gupta, Sushil Singh Chauhan and R.K. Shivpuri, presented in 2004 **IEEE Nuclear Science Symposium and Medical Imaging Conference** held in Rome, Italy.
2. “Impact of Metal Overhang and Guard Ring techniques on Breakdown voltage of Si strip sensors”, S. Chatterji, Kirti Ranjan, Ashutosh Bhardwaj, Namrata, Ajay K. Srivastava, Ashish Kumar, **Manoj Kumar Jha**, and R.K. Shivpuri, presented in 2003 **IEEE Nuclear Science Symposium and Medical Imaging Conference** held in USA.
3. “Impact of harsh radiation on metal-overhang equipped sensors in the LHC environment”, S. Chatterji, Kirti Ranjan, Ashutosh Bhardwaj, Namrata, Ajay

K. Srivastava, Ashish Kumar, **Manoj Kumar Jha**, and R.K. Shivpuri, presented in 2003 **IEEE Nuclear Science Symposium and Medical Imaging Conference** held in USA.

4. “Impact of Field Limiting Ring technique on Breakdown voltage of irradiated Si sensors”, Ashutosh Bhardwaj, Kirti Ranjan, Namrata, S. Chatterji, Ajay K. Srivastava, Ashish Kumar, **Manoj Kumar Jha**, and R.K. Shivpuri, presented in 2003 **IEEE Nuclear Science Symposium and Medical Imaging Conference** held in USA.

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