

## RESEARCH HIGHLIGHTS - Konstantin Goulios

1. Discovery of the muon-type neutrino (Brookhaven National Laboratory):
  - *Observation of High-Energy Neutrino Reactions and the Existence of Two Kinds of Neutrinos*  
G. Danby, J.-M. Gaillard, K. Goulios, L.M. Lederman\*, N. Mistry, M. Schwartz\* and J. Steinberger\*, Phys. Rev. Lett. 9 (1962) 36  
[http://prl.aps.org/abstract/PRL/v9/i1/p36\\_1](http://prl.aps.org/abstract/PRL/v9/i1/p36_1)  
\* was awarded the **1988 Nobel Prize in Physics** for this discovery
  - *Experimental Proof of the Existence of Two Neutrinos*  
Konstantin Goulios, **Ph. D. Thesis**, Columbia University, June 1963.
2. Limits on time-reversal invariance (Princeton-Pennsylvania Accelerator):
  - *Experimental Test of Time-Reversal Invariance in the Decay  $K_L^0 \rightarrow \pi^- \mu^+ \nu$*   
D. Bartlett, C.E. Friedberg, K. Goulios and D. Hutchinson  
Phys. Rev. Lett. 16 (1966) 282, [http://prl.aps.org/abstract/PRL/v16/i7/p282\\_1](http://prl.aps.org/abstract/PRL/v16/i7/p282_1)
3. Discovery of neutrino-proton elastic scattering (Brookhaven National Laboratory):
  - *Observation of the Reaction  $\nu_\mu + p \rightarrow \nu_\mu + p$*   
A. Bross *et al.*, Phys. Rev. Lett. 37 (1976) 186  
[http://prl.aps.org/abstract/PRL/v37/i4/p186\\_1](http://prl.aps.org/abstract/PRL/v37/i4/p186_1)
4. Measurements of elastic, diffractive, and total hadronic cross sections (Fermilab):
  - *Diffractive Interactions of Hadrons at High Energies*  
K. Goulios, Physics Reports 1 (1983) 169-219  
<http://www.sciencedirect.com/science/article/pii/0370157383900108>
5. First observation of photon diffraction dissociation (Fermilab):
  - *Diffraction Dissociation of Photons on Hydrogen*  
T. Chapin *et al.*, Phys. Rev. D31 (1985) 17  
[http://prd.aps.org/abstract/PRD/v31/i1/p17\\_1](http://prd.aps.org/abstract/PRD/v31/i1/p17_1)
6. Hadronic diffraction: experiments (Fermilab) and phenomenology.
  - *Observation of Exclusive Dijet Production at the Fermilab Tevatron  $p\bar{p}$  Collider*, T. Aaltonen *et al.*, Phys. Rev. D **77**, 052004 (2008)  
<http://prd.aps.org/abstract/PRD/v77/i5/e052004>
  - *Renormalization of Hadronic Diffraction and the Structure of the Pomeron*  
K. Goulios, Physics Letters B 358 (1995) 379-388; *ib.* B 363 (1995) 268  
<http://www.sciencedirect.com/science/article/pii/037026939501023J>
7. Discovery of the Top Quark (Fermilab):
  - *Observation of Top Quark Production in  $p\bar{p}$  Collisions with the Collider Detector at Fermilab* [http://prl.aps.org/abstract/PRL/v74/i14/p2626\\_1](http://prl.aps.org/abstract/PRL/v74/i14/p2626_1)  
F. Abe *et al.*, Physical Review Letters 74 (1995) 2626-2631.