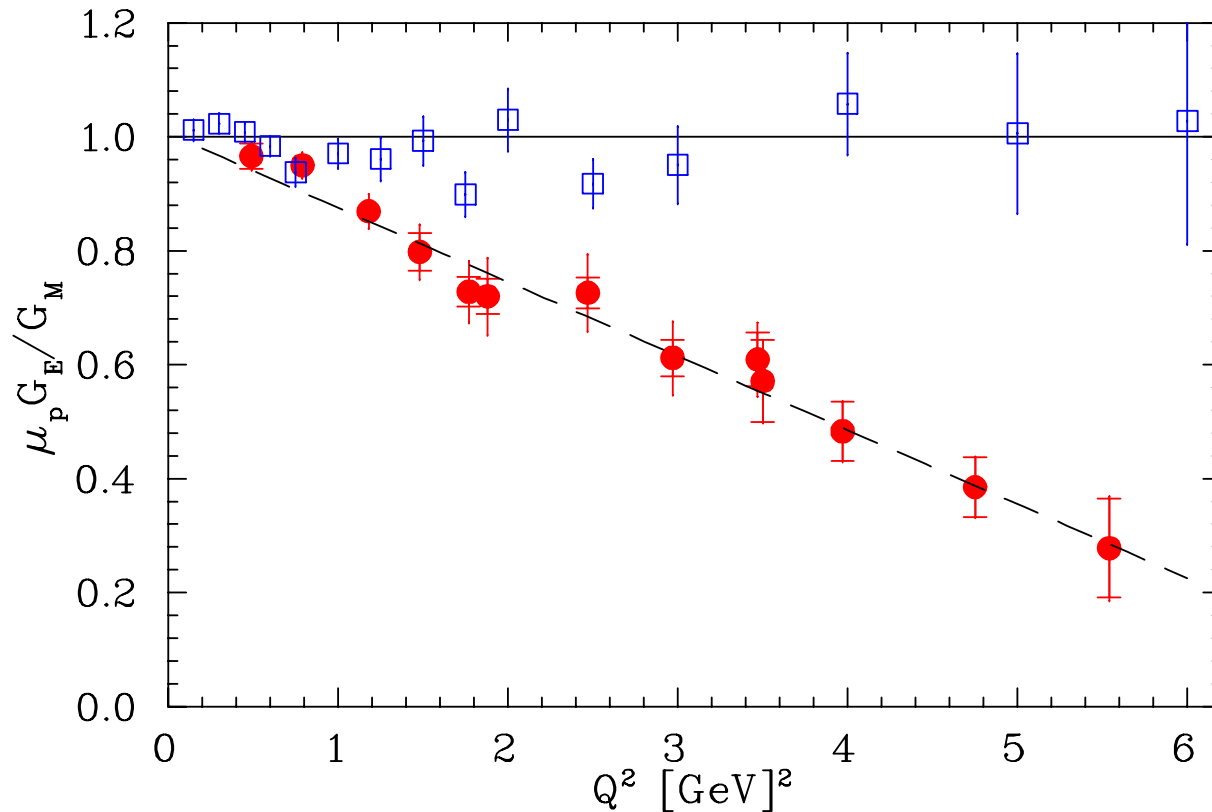


NUCLEON FORM FACTORS MEASUREMENTS VIA THE RADIATIVE RETURN AT B -MESON FACTORIES

H. Czyż, J.H. Kühn, E. Nowak, G. Rodrigo
hep-ph/0403062



Motivation



J. Arrington, *Phys. Rev. C* **68** (2003) 034325 [nucl-ex/0305009]

Y. C. Chen, A. Afanasev, S. J. Brodsky, C. E. Carlson, M. Vanderhaeghen
[hep-ph/0403058]

PHOKHARA 4.0

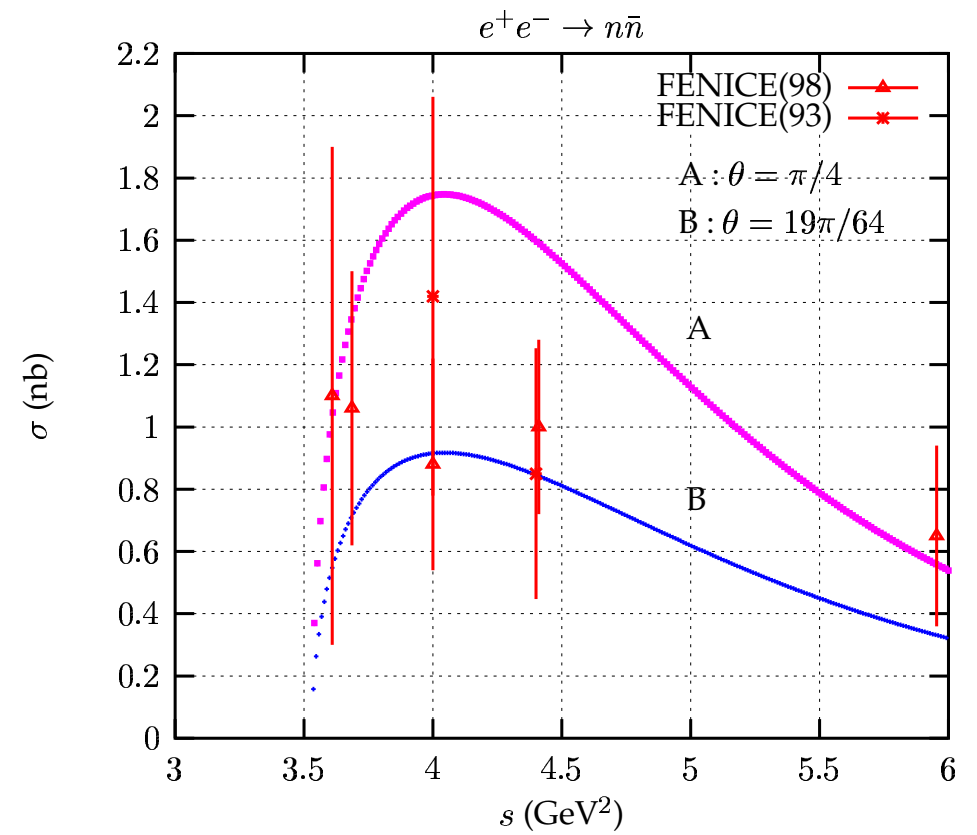
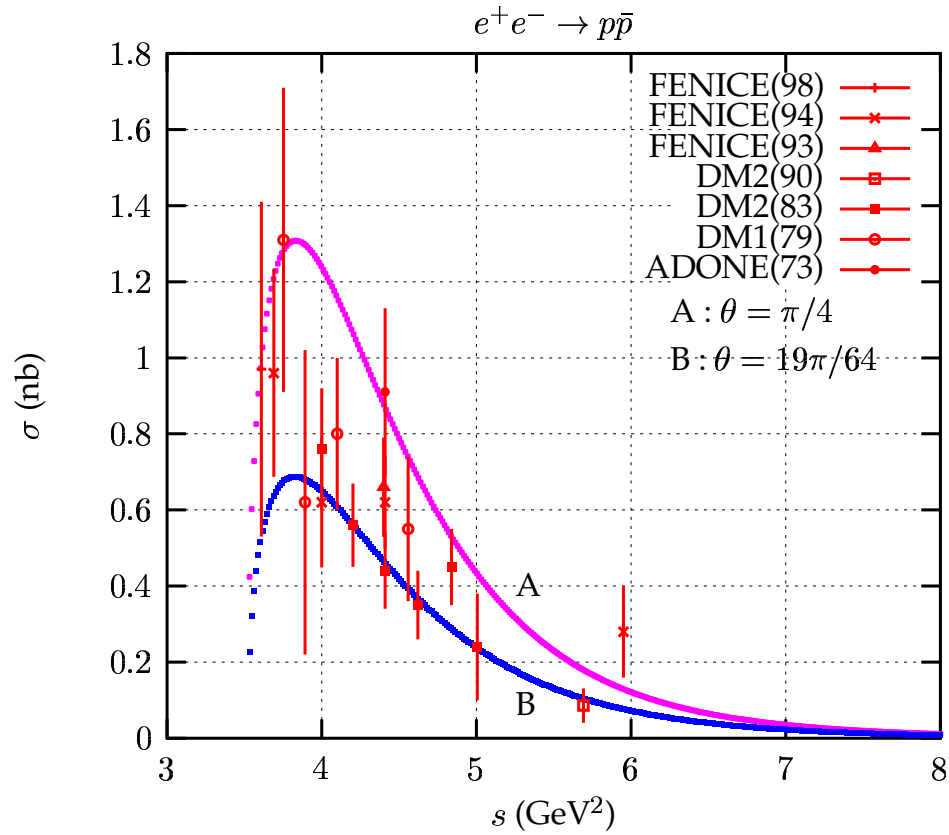
- PHOKHARA is a Monte Carlo event generator which simulates process $e^+e^- \rightarrow \text{hadrons} + \gamma$ at next-to-leading order (NLO) accuracy.
- The present version PHOKHARA 4.0 includes nucleon pair production as new channels, and NLO corrections to FSR for muon pairs
- Home page : <http://grodrigo.home.cern.ch/grodrigo/phokhara/>

Nucleon current

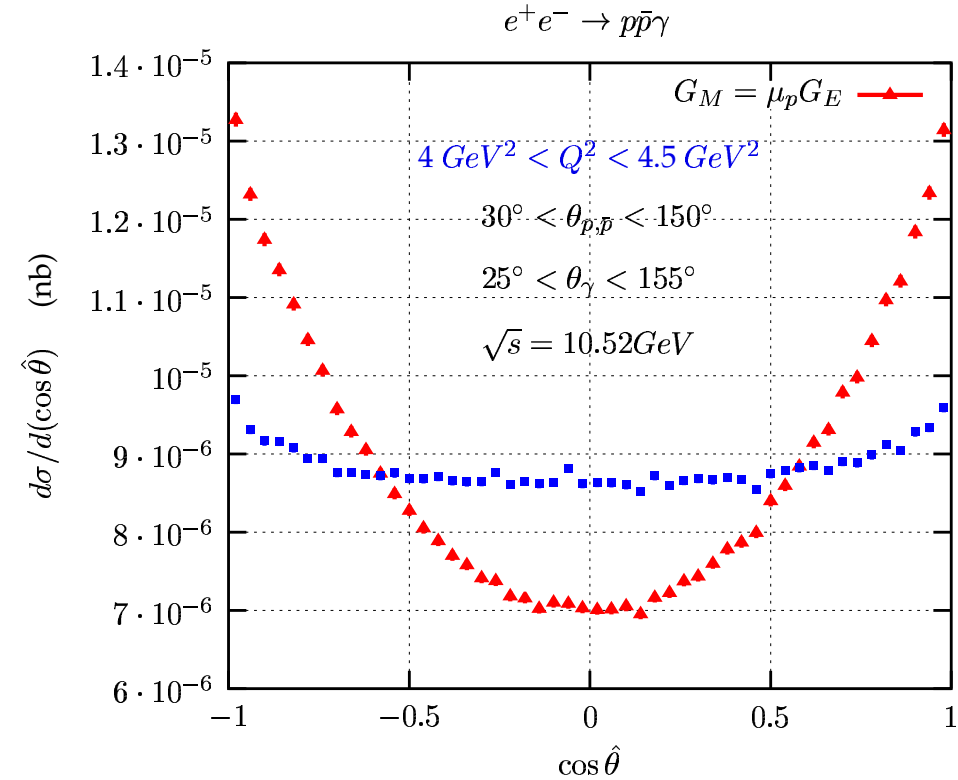
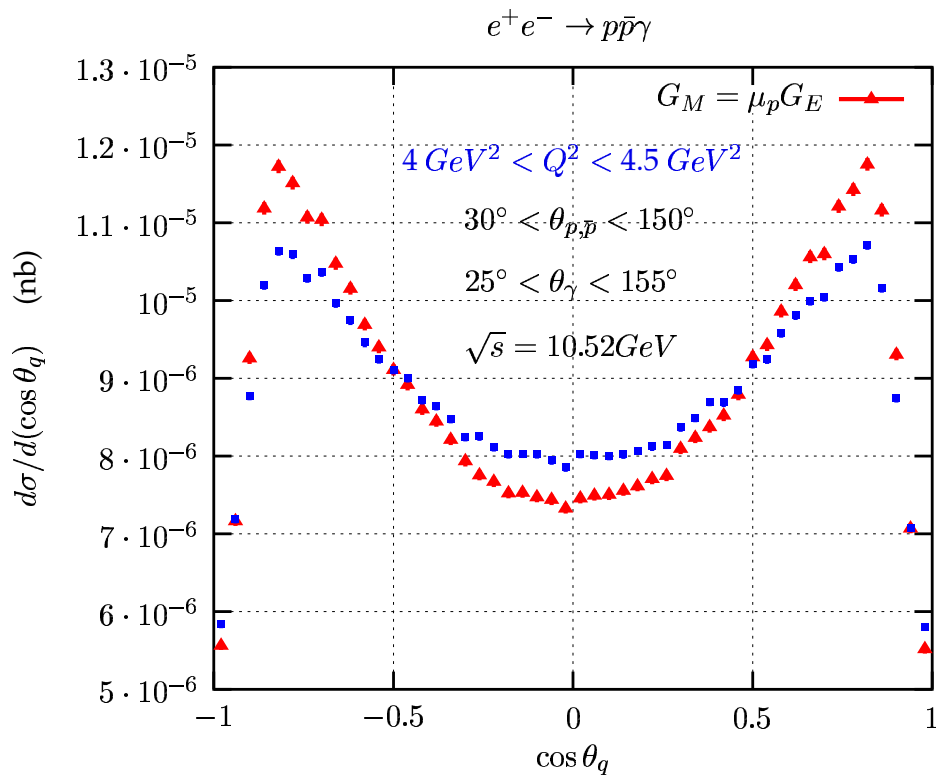
$$J_\mu = -ie \cdot \bar{u}(q_2) \left(F_1^N(Q^2) \gamma_\mu - \frac{F_2^N(Q^2)}{4m_N} [\gamma_\mu, \not{Q}] \right) v(q_1) ,$$

- F. Iachello, A. D. Jackson and A. Lande, *Phys. Lett. B* **43** (1973) 191
- F. Iachello, [nucl-th/0312074](#) and talk at Workshop on e^+e^- in the 1–2 GeV range: Physics and Accelerator Prospects, Alghero, Sardinia (Italy), 10–13 September, 2003

Nucleon current



Nucleon form factors measurements



Assumption : $\sigma(G_M = \mu_p G_E) = \sigma$

Predicted number of events ≈ 3500 (for $L = 200 \text{ fb}^{-1}$)

Summary

B-factory

+

PHOKHARA simulations

give possibility of **separate** electric and magnetic nucleon form factors

measurements in timelike region