Curriculum Vita

- *Name, first name, date and place of birth.*

  Khalatyan Norik, 11 June 1957, Yerevan, Armenia

  Married, have two sons and one daughter.

- *Scientific degree*

  1980 diploma - Moscow Engineering Physics Institute.

  1988 diploma - Candidate Phys.-Math. Science (Ph.D. in Physics)

- *Brief scientific biography*

  In **1980** I started my job at Yerevan Physics Institute after the graduation of the Moscow Engineering Physics Institute by speciality "Experimental Nuclear Physics". In **1981** I was sent for a long time **(1981-1990)** to the Institute for High Energy Physics (IHEP, Protvino) for participation on data analysis and in Physics analysis of the pp interactions at 360 GeV/c for the experiment NA23 (RCBC-EHS collaboration) performed at CERN on the European Hybrid Spectrometer (EHS) equipped with a Rapid Cycling Bubble Chamber (RCBC).

  I studied topological cross sections, multiparticle production of pions, kaons and baryons in pp-interactions at 360 GeV/c. Inclusive distributions of single pions and system of pions of various charge combinations were studied as well as the production ratio obtained in association with various trigger particles. The results were compared to current phenomenological models in attempt to understand multiparticle productions in hadron collisions.

  I spent a lot of time for the investigation of the two charged particles and neutral strange particles correlations of hadrons in pp-interactions. The observed transvers and rapidity correlations were compared with the LUND model predictions.

  The differential cross sections of elastic and inelastic pp-interactions were studied as a function of the impact parameter. The results were compared to those obtained at other energies. They were interpreted in the framework of a simple geometrical Monte-Carlo model of inelastic collisions considering protons as composite particles having a difinite effective radius with valence quarks inside. The model calculations indicated an increase of the effective radii both of protons and of valence quarks and an increase of the proton opacity with increasing energy.

From the measurements of the inclusive production ratios between, π^-, K^- and $\bar{p}$ at feynman x=0 in 360 Gev/c pp interactions and using the predictions of the Lund fragmentation model, I determined the strangeness and diquark suppression factors.

In **1988** based on the above mentioned results I was awarded by diploma Candidate of Phys. Mathem. Science (Ph.D.). From **1989** I am a Senior Scientist and a leader of group at Yerevan Physics Institute. In **1989** I started my work for collider experiment planed in the USSR UNK. My laboratory planed to do a Liquid Argon Monitoring system of purity used in LAr callorimeter for UCD at UNK.

In **1990** I took part in the EMPACT experiment at SSC. We made a prototype of cryostat for Monitoring system of purity of LAr used in LAr callorimeter. At the same time I was occupied by the set-up simulation.

Since **1991** I was a member of the muon detector subgroup of the Solenoidal Detector Collaboration (SDC). One of the most important physics issue of SDC was to search for the Higgs boson. Its decay into four muons provides the cleanest signal of its production. The muon system of SDC plays, therefore, very important role for triggering, identification and momentum measurement of muons. I worked on the designing and optimisation of the drift tubes for the central muon system of SDC so as to achieve good position resolution and two-track separation.

In **1992** I have been working at SSC laboratory for 6 months (July **1992** - January **1993**) as a guest scientist, where studied the geometrical acceptance of the muon system, using SDC detector Monte-Carlo simulation program SDCSIM. In particularly optimisation of chamber layer arrangement was done.

In april **1993** I was invited to KEK for one year to join to the Japanese SDC group (JSD). I continued the simulation study and examined muon track reconstruction efficiency. I checked and corrected the geometry of the central muon system and, accordingly, optimized the distribution of drift tubes in each superlayer.

At the same time I participated in an R&D program of the JLC (Japan Liner Collider) project at KEK. I installed a drift chamber simulation program GARFIELD in KEK and, using it, optimized the electric field, drift lines, x(t)-correlation, etc. of the first prototype of the CDC for JLC.

From April 1995 I have been working at KEK for JLC-CDC R&D as an invited physicist. One of the most important goals of the JLC experiment is to discover and study the Higgs boson. This requires a high resolution central tracker. Even if we assume a spatial resolution of 100μm per wire, the tracking chamber becomes as large as 2.3 m in radius and 4.6 m in length in order to fulfil the physics goal. Achieving a 100μm spatial resolution for a 4.6 m long chamber is quite non-trivial due to substantial gravitational and electrostatic sags. We need to be able to predict wire positions very precisely under the influence of gravitational and electrostatic forces. This requires a dedicated R&D program.

I have been developing a software program to predict the wire deflections, knowing wire tensions, cell structure, and high voltage on each wire. The validity of the prediction has to be proved experimentally. For this purpose, we have developed a wire tension and position measurement system. Throughout my this year's stay at KEK, I have been concentrating on the measurements of wire tensions, gravitational and electrostatic sags for a 4.6 m long test chamber in order to compare them with my prediction. Preliminary results of our measurements seem promising, but there are still a lot of things to do before we can conclude that we perfectly understand the wire behavior in a electrostatic field.

- *Knowledge of foreign languages*

  English, speak well.

  Little speak and understand Japanese.

- *Address*

a) Present address

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- *List of scientific publications*

1. J.L.Bailly,... Khalatyan N.,...et al.,"Topological Cross Sections and Charged Particle Multiplicities in pp Interactions at 360 GeV/c", Z.Phys. 1984,v.C23,p.205.
2. M.Asai,... Khalatyan N.,...et al.,"Inclusive K_s^0, Λ and $\bar{\Lambda}$ production in 360 GeV/c pp Interactions Using the European Hybrid Spectrometer", Z.Phys. 1985,v.C27,p.11.
3. T.Aziz,... Khalatyan N.,...et al.,"Inclusive K^*'s and Σ^*'s production in 360 GeV/c pp Interactions Using the European Hybrid Spectrometer", Z.Phys. 1986,v.C30,p.381.
4. M.Adamus,... Khalatyan N.,...et al.,"Rapidity dependence of Negative and All-charged multiplicities in Non-diffractive π^+p and pp collisions at 250 GeV/c", Phys.Lett. 1986, v.177B,p.239.
5. M.Asai,... Khalatyan N.,...et al.,"Neutral strange particle correlations in 360 GeV/c pp interactions", Z.Phys. 1987 v.C34, p.429.
6. J.L.Bailly,... Khalatyan N.,...et al.,"Strangeness and diquark suppression factors in 360 GeV/c pp interactions", Phys.Lett. 1987, v.195B, p.609.
7. J.L.Bailly,... Khalatyan N.,...et al.,"An impact parameter analysis of proton-proton elastic and inelastic interactions at 360 GeV/c", Z.Phys. 1987 v.C37, p.7.

8. J.L.Bailly,... Khalatyan N.,...et al.,"Inclusive Pion Production in 360 GeV/c pp interactions", Z.Phys. 1987 v.C35, p.309.
9. J.L.Bailly,... Khalatyan N.,...et al.,"Multiparticle production in proton-nucleus collisions at 360 GeV/c Using the European Hybrid Spectrometer", Z.Phys. 1987 v.C35, p.301.
10. J.L.Bailly,... Khalatyan N.,...et al.,"Analysis of transverse momentum distribution for pp interactions at 360 GeV/c in the framework of a quark-diquark fragmentation model", Z.Phys. 1987 v.C35, p.295.
11. J.L.Bailly,... Khalatyan N.,...et al.,"Two particle correlations in 360 GeV/c pp interactions", Z.Phys. 1988 v.C40, p.13.
12. J.L.Bailly,... Khalatyan N.,...et al.,"Event shape in Momentum Space of Proton-Proton Interactions at 360 GeV/c and Comparison to e^+e^- data", Phys.Lett., 1988, v.206B,p.371.
13. J.L.Bailly,... Khalatyan N.,...et al.,"Rapidity dependence of Multiplicity Distributions in Proton-Nucleus collisions at 360 GeV/c", Z.Phys. 1988 v.C40, p.215.
14. J.L.Bailly,... Khalatyan N.,...et al.,"Bose-Einstein correlation for Pions produced in pp collisions at 360 GeV/c", Z.Phys. 1989 v.C43, p.341.
15. M.Asai,... Khalatyan N.,...et al.,"Experimental results on proton diffractive dissociation. Study of the quark-diquark pomeron coupling", Z.Phys. 1990 v.C46, p.593.
16. "EMPACT/TEXAS, Leter of Intent", 30 November 1990
17. "Technical Design Report, Solenoidal Detector Collaboration", SDC-92-201, 1 April 1992
18. "Proceedings of the SDC Collaboration Meeting at KEK", SDC-92-276, June 1992
19. "Proceedings of the SDC Collaboration Meeting at KEK, May 25-29, 1993", SDT-000164, October, 1993
20. "Proceedings of the JLC collaboration meeting, Feb.1-4, Happo, 1994".

21. "Beam test of the prototype level-1 trigger system and drift tubes with field-shapers proposed for the SDC barrel muon system" , A 366 (1995) 310-319 ,NIM.

22. "Proceedings of the Linear Collider workshop at Iwate, Sept. 8-12, 1995". (to be published)

23. "JLC test chamber" (in preparation for NIM).