Erik Elfgren Curriculum Vitae

Experience is not what happens to a man. It is what a man does with what happens to him. - Aldous Huxley

Name Erik (Jonathan) Elfgren (Born December 21st, 1977, Sweden)
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Education

2008 Ph. D. Degree in Physics, Luleå University of Technology (LTU), Sweden
2005 Licentiate Degree in Physics, LTU
2002 M. Sc. in Particle Physics, Université de Montréal, Canada
2000 M. Sc. in Engineering Physics (340 ETCS credits), LTU
98/99 Exchange student, Courses in physics, mathematics and French, École Polytechnique de Montréal
1996 Higher School Certificate, Science programme: Electronics & computers, Midskogsskolan, Luleå

Employments

2011- **Associate professor in Energy Engineering** – Department of Engineering Science, Luleå University of Technology (LTU), Sweden

2010-2011 **Post-doc in Energy Engineering –** Department of Engineering Science, Luleå University of Technology (LTU), Sweden
- Research on energy optimization in industrial systems
- Examiner for a course in Mechanics & Modern Physics (with 400-500 students). Teacher for courses in (1) Basic Thermodynamics, (2) Thermodynamics and Heat Transfer, (3) Thermal and Hydraulic Machines, (4) Project course in Industrial Energy Processes and (5) Project course in Energy Engineering. Details on my teaching are attached in my Teaching Portfolio.
- Director of the National Graduate School of Space Technology (7.5 % of full time 2010)

2008-2009 **Acting Associate Professor –** Department of Applied Physics and Mechanical Engineering, LTU
- Research on energy optimization in industrial systems
- Examiner for courses in astrophysics & cosmology, mechanics & modern physics (with 400-500 students) and nonlinear physics; teacher for courses in thermodynamics and waves
- Director of the National Graduate School of Space Technology (30 % of full time)

2002-2007 **Research Assistant (Ph. D. Candidate)** – Department of Applied Physics and Mechanical Engineering, LTU
- Research on astrophysics and astroparticle physics (in Luleå, Grenoble, Paris and Lyon)
- Teaching astrophysics, cosmology, high-school physics, mechanics, modern physics, thermodynamics and waves; in charge of the teaching assistants in physics

2001-2002 **Research Assistant (M. Sc. Candidate)** – Groupe de Physique de Particules, Université de Montréal, Canada
- Research on excited and heavy leptons in the OPAL Collaboration (Omni Purpose Apparatus at LEP, Large Electron Positron Collider at CERN)
- Demonstrations and correction of assignments in optics and electromagnetic waves; thermal physics and statistical mechanics

2000 **System administration (8 weeks)** – Department of Civil Engineering, LTU
- Installation of the new server (RedHat 6.2) of the Department with services like Apache, SMB, IMAP, IMP, php, MySQL and Matlab with a web-based database
- Windows and Unix: System administration, user and technical support

1999 **CERN Summer student programme (11 weeks)** – CERN (European Laboratory for Particle Physics), Switzerland
- Set-up of a control system for the ion-accelerator REX-ISOLDE, C++ coding and cabling

1998-2000 **Assistant mathematics teacher (124 hours)** – Department of Mathematics, LTU

1998 **Optics – interferometry (8 weeks)** – The Physics and Chemistry of Solids Group (PCS) at the Cavendish Laboratory, University of Cambridge, UK
- Research on measuring 3D surfaces using Moiré fringes produced through interferometry

1997 **Programming (8 weeks) –** MEFOS (Foundation for Metallurgical Research), Luleå, Sweden
- Development of a user interface for a rolling-mill simulation program using Visual Basic

Qualifications

- Programming: Matlab, C, Fortran, Visual Basic, Javascript and cgi-scripts (perl, PHP & MySQL)
- Operating systems: Good knowledge of Linux/Unix, Windows and MacOS
- Languages: Fluent Swedish, English and French

Professional experiences

2011 Speaker at the 1st International Conference on Energy Efficiency and CO_2 Reduction in the Steel Industry, Düsseldorf, Germany (27 Jun-1 Jul)
2011 Co-author of a paper presented at the World Renewable Energy Congress 2011, Linköping, Sweden (8-13 May)
2011 Setting up a laboratory for the course Thermal and Hydraulic Machines at LTU
2011- Head of the Energy Engineering Laboratory at LTU
2010- Co-organizer of an International Masters Programme in Energy Engineering at LTU
2010 Speaker at the 13th Conference on Process Integration, Modelling and Optimisation for Energy Saving and Pollution Reduction, Prague, Czech Republic (28 Aug-1 Sep)
09-10 Organizer of workshops in the Graduate School of Space Technology: Trollhättan, Sweden (27-29 Jan, 2009), Esrange, Kiruna, Sweden (7-9 Sep, 2009) and IRF, Kiruna, Sweden (30-31 Aug, 2010)
2009 Organizer of two PhD courses, one in "Research methodology" and one in "Data analysis"
2009 "Adeliepriset" (prize to the best teacher of the year)
2008 Lindau Nobel Laureate Meetings, Germany (29 Jun-4 Jul)
2007 Invited speaker at the Swedish "Astronomdagarna", Kiruna, Sweden (21-23 Sep)
2006 Poster at the conference "Chemodynamics", Lyon, France (10-14 Jul), and poster at the conference "Dust from fundamental studies to astronomical observations", Les Houches, France (30 Apr-5 May)
05-09 Webmaster for the National Graduate School of Space Technology, Sweden: http://www.ltu.se/ngsst and for the Division of Physics at LTU: http://www.ltu.se/inst/tfm/Fysik
2003 Scholarship (5,000 €) for three months research, l'Observatoire de Grenoble, France
2003 Poster at the Workshop on "Cosmology and Particle Physics 2003", CERN, Switzerland (12-17 Jun)
2002 Nordita summer school "Cosmology and the High-Redshift Universe", Abisko, Sweden (5-15 Aug)
2002 Presentation at the OPAL plenary in March and June, CERN, Switzerland
2001 Presentation of my MSc thesis, Lake Louise Winter Institute, British Columbia, Canada (18-24 Feb)
97-98 Student member of the Board of the Department of Mathematics, LTU

Teaching and pedagogical experiences

See the attached Teaching Portfolio (in Swedish).

Other experiences

05-06 Treasurer and volunteer of the youth section of the Red Cross, Luleå, Sweden
03-07 Chairman of the regional youth church organisation SMU ÖN, Sweden
01 Volunteer in Suicide Action Montréal (suicide prevention), Canada
99, 01 Actor and singer in the amateur theatre group "Imaginart" at Université de Montréal, Canada

References

Prof. Carl-Erik Grip	Luleå University of Technology	carl-erik.grip@ltu.se
Prof. Sverker Fredriksson	Luleå University of Technology	sverker.fredriksson@ltu.se
Prof. Georges Azuelos	Université de Montréal	azuelos@lps.umontreal.ca
Prof. François-Xavier Désert	Université de Grenoble	francois-xavier.desert@obs.ujf-grenoble.fr

Publications – h-index: 12 (Web of Science)

- Elfgren, E., Grip, C.-E., Karlsson, J. (2011), Exergy as a means for process integration in an integrated steel plant, 1st International Conference on Energy Efficiency and CO_2 Reduction in the Steel Industry, Düsseldorf, Germany, 27 June-1 July.

- Grip C., Elfgren E., Söderström M., Thollander P., Berntsson T., Åsblad A., et al (2011). Possibilities and problems in using exergy expressions in processintegration. In: Proceedings of the World Renewable Energy Congress 2011 (WREC 2011), 9-13 May, Linköping. Linköping: Electronic Press.
- Elfgren, E., Grip, C.-E., Wang, C. and Karlsson, J. (2010), Possibility to Combine Exergy with other Process Integration Methods for a Steelmaking Case. Chemical Engineering Transactions, 21, 2010 , pp 1375-1380.
- Elfgren, E. and Fredriksson, S. (2008), Mass limits for heavy neutrinos. Astronomy and Astrophysics, 479, pp 347-353 (astro-ph/0710.3893).
- Elfgren, E. (2007), Cosmic dust and heavy neutrinos. Doctoral Thesis 2007:75, Luleå University of Technology, ISSN 1402-1544 ISRN LTU-DT—07/75—SE.
- Elfgren, E. and Fredriksson, S. (2007), Are there indications of compositeness of leptons and quarks in CERN LEP data? (hep-ph/0712.3342).
- Elfgren, E. (2007), Using Monte Carlo to optimize variable cuts. (hep-ph/0712.3340).
- Elfgren, E., Désert, F.-X. and Guiderdoni, B. (2007), Dust distribution during reionization. Astronomy and Astrophysics, 476, pp 1145-1150 (astro-ph/0705.3403).
- Elfgren, E. (2005), Dust in the early universe. Licentiate Thesis 2005:17, Luleå University of Technology, ISSN 1402-1757 ISRN LTU-LIC-05/17-SE.
- Elfgren, E. and Désert, F.-X., (2004), Dust from reionization. Astronomy and Astrophysics, 425, pp 9-14 (astro-ph/0310135).
- Elfgren, E. (2002), Heavy and Excited Leptons in the OPAL Detector? Master's Thesis, Université de Montréal, Montréal, pp 1-85 (hep-ph/0209238).
- Elfgren, E. (2001), Detection of a Hypercharge Axion in ATLAS, appearing in "Fundamental Interactions", Proceedings of the 16th Lake Louise Winter Institute, British Colombia, Canada, World Scientific, pp 185-191 (2002).
- Azuelos, G., Elfgren E. and Karapetian, G. (2001), Search for the FCNC decay $Z \rightarrow tq$ in the channel $t \rightarrow lvb$. OPAL Technical Note 693. This note and OPAL Papers and Preprints PR345 provide part of the background material to: Abbiendi, G. et al. (2001): The OPAL Collaboration. Search for Single Top Quark Production at LEP2. CERN-EP-2001-066. Physics Letters B521 (2001), pp 181-194.
- Azuelos, G., Benchekroun, D., Cakir, O., Elfgren, E., Gianotti, F., Hansen, J.-B, Hinchliffe, I., Hohlfeld, M., Jakobs, K., Leroy, C., Mehdiyev, R., Paige, F.E., Polesello, G., Stenzel, H., Tapprogge, S., Usubov, Z. and Vacavant, L. (2001), Impact of Energy and Luminosity upgrades at LHC on the Physics program of ATLAS. J. Phys. G28 (2002), pp 2453-2474. (hep-ex/0203019).
- Elfgren, E. (2001), Detection of a Hypercharge Axion in ATLAS, Fundamental interactions: proceedings of the Sixteenth Lake Louise Winter Institute, Lake Louise, Alberta, Canada, 18-24 February, pp 185-189.
- Elfgren, E. (2000), Detection of a Hypercharge Axion in ATLAS. A Monte-Carlo Simulation of a Pseudo-Scalar Particle (Hypercharge Axion) with Electroweak Interactions for the ATLAS Detector in the Large Hadron Collider at CERN. Master's Thesis 2000:334CIV, Luleå University of Technology, ISSN 1402-1617 (hep-ph/0105290).
- Elfgren, E. (1999), Control System for the Ion Accelerator at ISOLDE. Student lecture presented on 13 August 1999 at CERN, Geneva, Switzerland. Published in CERN Annual Report 1999, p 347.
- Elfgren, E. (1998), Moiré Profilometry. Research report for the PCS group, Cavendish Laboratory, University of Cambridge.

Publications of the OPAL collaboration

- Barate, R. et al. (2003), Search for the standard model higgs boson at LEP. Physics Letters B 565: 61-75.
- Abbiendi, G. et al. (2003), Test of noncommutative QED in the process $e+ e- \rightarrow \gamma\gamma$ at LEP. Physics Letters B 568: 181-190.
- Abbiendi, G. et al. (2003), Bose-Einstein correlations of $\pi 0$ pairs from hadronic Z^0 decays Physics Letters B 559: 131-143.
- Abbiendi, G. et al. (2003), A measurement of semileptonic B decays to narrow orbitally excited charm mesons. European Physical Journal C 30: 467-475.

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- Abbiendi, G. et al. (2003), A measurement of the $\tau^- \rightarrow \mu^- \nu_\mu \nu_\tau$ Branching Ratio. Physics Letters B 551: 35-48.
- Abbiendi, G. et al. (2003), Search for nearly mass degenerate charginos and neutralinos at LEP. European Physical Journal C 29: 479-489.
- Abbiendi, G. et al. (2003), Inclusive analysis of the b quark fragmentation function in Z^0 decays at LEP. European Physical Journal C 29: 463-478.
- Abbiendi, G. et al. (2003), Multiphoton production in e+ e− collisions at $\sqrt{s}$ = 181 to 209 GeV. European Physical Journal C 26: 331-344.
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- Abbiendi, G. et al. (2003), Search for a low mass CP odd Higgs boson in e+ e− collisions with the OPAL detector at LEP-2. European Physical Journal C 27: 483-495.
- Abbiendi, G. et al. (2003), Measurement of the cross-section for the process $\gamma\gamma \rightarrow$ p p at $\sqrt{s_{ee}}$ = 183 to 189 GeV at LEP. European Physical Journal C 28: 45-54.
- Abbiendi, G. et al. (2003), Charged particle momentum spectra in e+ e− annihilation at $\sqrt{s}$ = 192 to 209 GeV. European Physical Journal C 27: 467-481.
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- Abbiendi, G. et al. (2002), Measurement of neutral current four fermion production at LEP-2. Physics Letters B 544: 259-273.
- Abbiendi, G. et al. (2002), Measurement of the b quark forward backward asymmetry around the Z^0 peak using an inclusive tag. Physics Letters B 546: 29-47.
- Abbiendi, G. et al. (2002), Search for scalar top and scalar bottom quarks at LEP. Physics Letters B 545: 272-284, 2002, Erratum-ibid. B548: 258.
- Abbiendi, G. et al. (2002), Search for associated production of massive states decaying into two photons in e+ e− annihilations at $\sqrt{s}$ = 88 to 209 GeV. Physics Letters B 544: 44-56.
- Abbiendi, G. et al. (2002), Search for charged excited leptons in e+ e− collisions at $\sqrt{s}$ = 183 to 209 GeV. Physics Letters B 544: 57-72.
- Abbiendi, G. et al. (2002), Measurement of the charm structure function $F^{\gamma}_{2,c}$ of the photon at LEP. Physics Letters B 539: 13-24.