Leif Adelöw

CONTACT INFORMATION

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EDUCATION

Uppsala University, Uppsala, Sweden   **August, 1992 − 1997**
Master in Science, Engineering Physics

- Programme: *Radiation Physics/Applied Physics*
- Master Thesis: *A Master Thesis on Pixel Array Detectors suitable for the ATLAS inner detector*

Sundstagymnasiet Karlstad, Sweden   **1990**
Upper secondary school (naturvetenskaplig linje)

Queen Anne's County High School, Maryland, USA   **1989**
Upper secondary school (High School)

Tinvallagymnasiet Karlstad, Sweden   **1986 − 1988**
Upper secondary school (naturvetenskaplig linje)

PROFESSIONAL EXPERIENCE

Direct Conversion, Danderyd, Sweden

Senior Physicist, Image Quality Specialist   **Sept 2018-present**
Development of photon counting x-ray imaging detectors[1]. Working with oem customer to achieve specific detector tuning. Develop algorithms to optimize detector tuning. Performing simulations to predict physics in x-ray detectors. Optimizing detector operative system. Performing EMC studies and preparing for EMC complience. Designing setups for various x-ray studies including software to control x-ray tubes and other data acquisition systems. Creating firmware and drivers for novel x-ray detector backends.

Work environment representative [2021-present].

FOI, Swedish Defence Research Agency, Grindsjön, Sweden

Scientist, electro physics   **March 2012-Sept 2018**
Working with test of electronic susceptibility of devices, design of test objects and development of methods using microwaves in the UHF and SHF band (mode stirred reverberation chamber) [2]. Analysis of rapid events using high speed video cameras [3], [4], [5], [6] and photon dopler velocimetry. Design of embedded data aquisition systems for ESD testing of explosives and resistive thermal ignition [7]. Designing test monitoring systems using custom network broadcast trigger data collection, using USB/GPIB/Ethernet/VXI-11/RS-232/RS-485/Raw Socket or VISA server.

Acting evacuation leader and part of safety organization [2016-2018] and local radiation expert [2014-2018].

Scientist, warheads and propulsion   **March 2009-2012**
Working with characterization and design of warheads and rockets. Designing experimental laboratory setups for testing explosives and propellants. Performing analysis on experimental data from various ballistic experiments. Constructing systems for x-ray tomography [8]. Working with flash x-ray systems. Computational Physics (linear algebra, Monte Carlo)[9].

XCounter AB, Danderyd, Sweden

Research Engineer   **August, 1999 − March 2009**
Working with design, development and productification of X-ray detectors[10] [11] [12] [13] [14] [15] [16] [17].Developing software tools and simulators for tomographic reconstruction, X-ray attenuation in matter and electron-atom interaction. Experimentally verifying and testing new detector designs. Designing new X-ray systems. Performing litterature studies within the area of expertise. Writing specifications, verifications and testing routines. Possesses a firm knowledge on linear image systems and its implification on medical image performance. General experimental experience in

- ASIC testing,
- electrical assembly
- mechanical design and testing,
- cleanroom experience
  - plasma cleaning
  - ultrasonic cleaning
  - bonding machines etc,

- gas chromatography
- X-ray absorption spectroscopy (XAS)
- X-ray emission spectroscopy (XES)
- Holographic interferometry (HI)

KTH/DigiRay AB, EPI, KTH, Stockholm, Sweden

PhD student[1]   **January, 1998 − August, 1999**

Employed as a industry based PhD student at The Particle and Astroparticle Physics Group, The Royal Institute of Technology (KTH). Performed experimental work within a small group group in a multidiciplinary fashion.

Participated in regular group member issues such as monthly seminars, giving lectures etc. Conducted several classes in various experimental physics labs. Worked in a small group developing a novel position sensitive gas based X-ray detector. Due to the limited size of the group we worked in a truly multidisciplinary fashion with topics ranging from electronic measurements, code development to mechanical design.

In 1999 *Digiray AB* was renamed *XCounter AB* and moved to a different location.

KTH/UU/LBNL, LBNL, Berkeley, CA, USA

Diploma work   **April, 1997 − December, 1997**

Worked with ASIC testing, detector testing and analysis of test beam data at the Detector R&D group, Physics Division, Lawrence Berkeley National Laboratory, CA, USA. This work was performed under the supervision of Prof. Sven Kullander, ISV, UU, Uppsala and Dr Kevin Einsweiler, LBNL

LBNL/CERN, CERN, Geneva, CH

Test Beam Activity   **Sept, 1997, 3 weeks**

Working with data aquisition at H8 beam line, CERN

Courses and conferences attended

- Sixth International Symposium on Non-equilibrium Processes, Plasma, Combustion, and Atmospheric Phenomena, *CIAM/RAS*, October 6-10, 2014 Sochi, Russia
- TomoDamage, *Fraunhofer EMI*, Aug. 29-31,2012, Freiburg
- Business Development, *Ahredo AB* Linköping, 4 days, 2010
- Open radiation, operator cource, Stockholm, 2 days, 2009
- Explosives, Stockholm, 12 days, 2009
- Medical Imaging, *Society of Photo-Optical Instrumentation Engineers* (SPIE), San Diego , USA, 2006
- Nuclear Science Symposium & Medical Imaging Conference, *Institute of Electrical and Electronics Engineers* (IEEE), Portland, USA, 2003
  - Cource: *Geant4*
- Medical Imaging, SPIE, San Diego, USA, 2003
- Nuclear Science Symposium & Medical Imaging Conference, IEEE, Norfolk, Virginia, 2002
  - Cource: *Radiation Detection & Measurements*, 2 days
- International Workshop on Aging Phenomena in Gaseous Detectors, DESY, Hamburg, 2001
- Joniserande Strålning - grundkurs i strålskydd, SSM (former SSI), Solna, 2 days, 2001
- Imaging 2000, KTH, Stockholm, 2000
- Nuclear Science Symposium & Medical Imaging Conference, IEEE, Lyon, France, 2000
- Nuclear Science Symposium & Medical Imaging Conference, IEEE, Toronto, Canada, 1998
  - Cource: Integrated Circuit Front Ends for Nuclear Pulse Processing, 2 days

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[1]Not completed

Cource: Fundamentals of Gas Detectors and Recent Developments, 2 days
- LabWindows/CVI Basic, National Instruments, Solna, 3 days, 1998
- Medical Imaging, SPIE, San Diego, USA, 1998
  Cource: Image Quality, 2 days

PATENTS

[18] Tom Francke and Leif Ericsson. "PARALLAX-FREE DETECTION OF IONIZING RADIATION". WO/2002/025313. Mar. 2002. URL: http://www.freepatentsonline.com/WO2002025313.html.

[19] Tom Francke and Leif Ericsson. "SCINTILLATOR BASED DETECTION APPARATUS AND METHOD USING TWO-DIMENSIONAL MATRIX OF LIGHT DETECTING ELEMENTS". WO/2002/037139. May 2002. URL: http://www.freepatentsonline.com/WO2002037139.html.

PUBLICATIONS

[1] Christer Ullberg et al. "Measurements on a novel 4-side buttable photon counting ASIC with integrating charge sharing correction". In: Mar. 2022, p. 25. DOI: 10.1117/12.2611482.

[2] T. Hurtig et al. "Destructive high-power microwave testing of simple electronic circuit in reverberation chamber". In: *2015 IEEE International Symposium on Electromagnetic Compatibility (EMC)*. Aug. 2015, pp. 1133–1135. DOI: 10.1109/ISEMC.2015.7256328.

[3] T. Hurtig et al. "Experiments on gliding discharge configuration for plasma assisted combustion". In: *2013 19th IEEE Pulsed Power Conference (PPC)*. June 2013, pp. 1–6. DOI: 10.1109/PPC.2013.6627399.

[4] Anders Larsson et al. "Experiments on Gliding Discharge Configuration for Plasma-Assisted Combustion". In: *IEEE Transactions on Plasma Science* 42.10 (2014), pp. 3186–3190. DOI: 10.1109/TPS.2014.2314310.

[5] Magnus Lindström, Leif Adelöw, and Rose-Marie Karlsson. *Undersökning av defekta rökhandgranate m/56*. Stockholm: Totalförsvarets forskningsinstitut (FOI), 2015.

[6] Leif Adelöw et al. *WP200 of the EDA project Munition Life Management (MLM) : third progress report*. Stockholm: Totalförsvarets forskningsinstitut (FOI), 2017.

[7] M Negri et al. "New technologies for ammonium dinitramide based monopropellant thrusters - The project RHEFORM". In: *Acta Astronautica* 143 (Nov. 2017).

[8] Leif Adelöw. *Datortomografi : dokumentation av FoTomo*. Stockholm: Avdelningen för Försvars- och säkerhetssystem, Totalförsvarets forskningsinstitut (FOI), 2009.

[9] Tomas Hurtig and Leif Adelöw. *Reserapport från NepCap2012 : 5th international symposium on non-equilibrium processes, plasma, combustion, and atmospheric phenom...* Stockholm: Totalförsvarets forskningsinstitut (FOI), 2012.

[10] Andrew D. A. Maidment et al. "Clinical Evaluation of a Photon-Counting Tomosynthesis Mammography System". In: *Digital Mammography / IWDM*. Ed. by Susan M. Astley et al. Vol. 4046. Lecture Notes in Computer Science. Springer, 2006, pp. 144–151. ISBN: 3-540-35625-8.

[11] Susan M. Astley et al., eds. *Digital Mammography, 8th International Workshop, IWDM 2006, Manchester, UK, June 18-21, 2006, Proceedings*. Vol. 4046. Lecture Notes in Computer Science. Springer, 2006. ISBN: 3-540-35625-8.

[12] A. D. A. Maidment et al. "Evaluation of a photon-counting breast tomosynthesis imaging system". In: *Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series*. Ed. by M. J. Flynn and J. Hsieh. Vol. 6142. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series. Mar. 2006, pp. 89–99. DOI: 10.1117/12.654651.

[13] A. Maidment et al. "Evaluation of a photon-counting breast tomosynthesis imaging system". In: *Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series*. Ed. by M. J. Flynn. Vol. 5745. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series. Apr. 2005, pp. 572–582. DOI: 10.1117/12.597317.

[14] S. J. Thunberg et al. "Dose reduction in mammography with photon counting imaging". In: *Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series*. Ed. by M. J. Yaffe and M. J. Flynn. Vol. 5368. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series. May 2004, pp. 457–465. DOI: 10.1117/12.530649.

[15] S. J. Thunberg et al. "Evaluation of a photon-counting mammography system". In: *Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series*. Ed. by L. E. Antonuk and M. J. Yaffe. Vol. 4682. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series. May 2002, pp. 202–208.

[16] T. Francke et al. "Dose reduction in medical X-ray imaging using noise free photon counting". In: *Nuclear Instruments and Methods in Physics Research A* 471 (Sept. 2001), pp. 85–87.

[17] T. Francke et al. "Dose reduction using photon-counting x-ray imaging". In: *Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series*. Ed. by L. E. Antonuk and M. J. Yaffe. Vol. 4320. Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series. June 2001, pp. 127–132.

COMPUTER
SKILLS

- Software Packages: Matlab, Femlab, Autocad, freeCAD, libreCad
- Programming: Matlab (MEX), C/C++, C#, Qt, Fortran, SQL, Python, Perl, CVI, LabView, Linux shell scripting, MPI, OpenCL, CUDA
- Administration: LDAP, Apache, Sendmail, VirtualBox
- Publishing: $\LaTeX 2_\varepsilon$

REFEREES

Available on request.