

Benjamin J. Kaduk

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Education and Employment

- **Massachusetts Institute of Technology Consortium for Kerberos and Internet Trust (MIT KIT)**, Cambridge MA
Programmer/Analyst, July 2012 to February 2015; DevOps Engineer, February 2015 to present
- **Massachusetts Institute of Technology (MIT)**, Cambridge, MA
Ph.D., Chemistry, June 2012.
Doctoral work under Troy Van Voorhis in computational electronic structure theory: expanding constrained density-functional theory to the multireference CDFT-CI method (implementation in Q-CHEM 4.0), and developing efficiently scaling analytical gradients of the same.
- **University of Illinois at Urbana-Champaign (UIUC)**, Champaign-Urbana, IL
B.S., Chemistry, May 2007.
B.S., Mathematics, May 2007.

Software and Standards Experience

- **MIT Kerberos**
Maintain the krb5 distribution, including feature development, code and design review, and documentation. Member of the Kerberos security team. Primary maintainer of Kerberos for Windows.
- **OS X 64-bit SAP SNC Shim for System GSS-API Support**
The 64-bit SAP GUI on OS X has an incompatible ABI with the system (and MIT Kerberos) GSS-API library. The shim library at <https://github.com/kaduk/osxsnc> implements a SAP Secure Network Communications adaptor, to bridge the ABI incompatibility.
- **Internet Engineering Task Force (IETF)**
Co-chair of the Common Authentication Technology Next Generation (kitten) working group, July 2014 to present. Author or coauthor of several internet drafts. Member of the security directorate document review rotation. Participant in NFSv4 and OAuth working groups, and observer in several others.
- **AFS-3 Standardization Group**
Finalize the specification for the rxgk (GSS-API) Rx security class. Improve the specification for rxgk integration with the AFS-3 protocol, currently awaiting working group last call.
- **OpenAFS Network File System**
Member of the release team and packaging maintainer for FreeBSD and Debian Linux. Very active in project development on the master branch, preparing the project for a new stable release branch.
- **MIT Athena Release Team**
Maintain Debathena, a set of 200 Debian packages on top of Debian/Ubuntu that implement the MIT Athena environment on the full set of supported releases, including compatibility layers if necessary.
- **Q-Chem contributor**
Implement new methods for computing excited-state energies, maintain existing code, and fix bugs in the Q-CHEM *ab initio* computational chemistry package (<http://q-chem.com>). Occasionally help review infrastructure and build system changes at the request of upstream.
- **FreeBSD**
Documentation committer, and member of the Quarterly Status Report team.
In the Ports Collection, maintain `net/openafs`, `net-im/zephyr`, `devel/e2fsprogs-libss`, and `science/vmd`.
- **MIT Student Information Processing Board (SIPB)**
Member since Fall 2007; Treasurer Spring 2008 to February 2012. Within SIPB (MIT's computer club), which provides many services to the community above and beyond the official offerings of campus IS&T: maintain two AFS cells, a Solaris dialup, the mail archive/everything-else server, documentation offerings, and provide user support for walk-ins and a webhosting service.

Skills and Languages

- C expert, a subset of C++, C/Fortran linkage, Debian packaging, L^AT_EX, shell (mostly Bourne, some C), Python, French

Honors, Awards, and Recognitions

- MIT IS&T Spotlight Award, August 2013
- Bronze Medalist in the 35th International Chemistry Olympiad, held in Athens, Greece, July 2003
- MIT Presidential Fellowship, September 2007
- Finalist for the Hertz Foundation Graduate Fellowship, February 2007
- Finalist for the Gates Cambridge Fellowship, February 2007
- Finalist for the Churchill Foundation Scholarship, February 2007
- Honorable Mention for the National Science Foundation Graduate Fellowship, April 2008

Publications and Research

- Kaduk B. (2014) Structure of the GSS Negotiation Loop. IETF. In RFC Editor queue.
- Kaduk B., Tsuchimochi T., and Van Voorhis T. (2014) Analytic energy gradients for constrained DFT-configuration interaction. *J. Chem Phys.*, **140**, 18A503.
- Shao Y. *et al.* (2014) Advances in molecular quantum chemistry contained in the Q-Chem 4 program package. *Mol. Phys.*, **113**(2), 184-215.
- Kaduk B., Kowalczyk T., and Van Voorhis T. (2012) Constrained density functional theory. *Chem. Rev.*, **112**(1), 321–370.
- Kaduk B. and Van Voorhis T. (2010) Conical intersections using constrained density functional theory–configuration interaction. *J. Chem. Phys.*, **133**, 061102
- Van Voorhis T. , Kowalczyk T. , Kaduk B. , Wang L.-P. , Cheng C.-L. and Wu Q. (2010) The Diabatic Picture of Electron Transfer, Reaction Barriers, and Molecular Dynamics. *Annu. Rev. Phys. Chem.*, **61**(1), 149-170.
- Wu Q. , Kaduk B. and Van Voorhis T. (2009) Constrained density functional theory based configuration interaction improves the prediction of reaction barrier heights. *J. Chem. Phys.*, **130**(3), 034109
- Yang S., Coe J.D., Kaduk B. and Martínez T.J. (2009) An “optimal” spawning algorithm for adaptive basis set expansion in nonadiabatic dynamics. *J. Chem. Phys.* **130**, 134113.