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To whom it may concern

Martin Sandve Alnæs

I first met Martin Sandve Alnæs at the Geilo Winter School in Computational Mathematics in 2006. Later that year, I came to work at Simula Research Laboratory where Martin had just started on his Ph.D. work. I have come to work closely together with Martin and we have had a very constructive and fruitful collaboration.

As part of the FEniCS project[1] I had earlier developed FFC, a compiler for finite element variational forms. Martin had developed similar capabilities as part of SyFi together with his supervisor Kent Andre Mardal. Together, we decided to develop a common framework for finite element code generation, consisting of a common code generation interface (UFC, Unified Form-assembly Code) and a common form language (UFL, Unified Form Language). Version 1.0 of UFC was completed in 2007. Martin was one of the driving forces behind UFC and made significant contributions to its design, implementation and documentation. Work on UFL began in 2007, and Martin has been the leading designer. Almost single-handedly, he has designed and implemented UFL, which has now replaced FFC as the standard form language in FEniCS. UFL adds a range of new capabilities to FEniCS, such as efficient expression of nonlinear variational forms and functional differentiation.

Martin has also made significant contributions to the design and implementation of the linear algebra interfaces in FEniCS. These interfaces are implemented as part of the DOLFIN C++/Python library and provide a common interface to linear algebra from PETSc, Trilinos/Epetra, uBLAS and MTL4.

[1] `http://www.fenics.org/`

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Martin is without doubt the best all around programmer I have ever met. His expertise in C++ and Python has been an invaluable asset to the FEniCS project. He is well organized and highly efficient. He is also very well behaved and social, but not afraid to voice his opinion. It is often difficult to win an argument with him (since he is often right), but he is never unreasonable and will be convinced by a better argument. This is a virtue I value highly.

In addition to being an expert programmer, Martin's qualifications range from mathematical analysis and finite element methods to applications in physics and biomedicine.

In summary, Martin is a very competent young man that I can strongly recommend for a postdoc position.

Sincerely

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