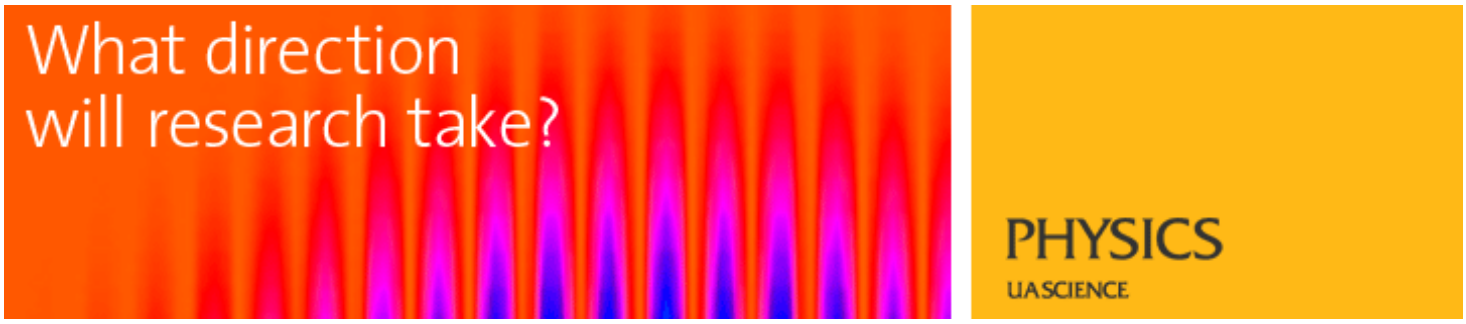

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My research is focused on the development and application of effective
field theories to quantum chromodynamics, with the ultimate goal of
achieving a deeper understanding of the strong interactions that
underlie nuclear physics. Measurements of QCD made by contemporary
nuclear and particle experiments are often complicated by the presence
of multiple disparate energy scales which obscure the relevant physics.
The effective theories I develop and work with provide a powerful
organizing tool for systematically separating different scales,
resulting in a simpler and more predictive framework. I have worked on
non-relativistic effective theories of the strong interactions (NRQCD),
an effective theory of heavy nucleons coupled to

	pions, heavy-quark effective theory (HQET), and soft collinear effective theory (SCET).

Students:

Current:

Michael Fickinger: (Joined group Fall 2006), currently working on extractions of the strong coupling from thrust data using SCET, precision determination of heavy quark fragmentation functions, and precision determination of parton distribution functions in the *x* --> 1 limit. Working in collaboration with Bira van Kolck on the role of the roper resonance in nucleon-nucleon effective theory. Publications

Emanuele Mereghetti: (Joined group Winter 2006. Accepted postdoc offer at Berkeley beginning Sept. 2011), currently working in collaboration with Bira van Kolck on *T* violation in chiral perturbation theory, precision determination of heavy quark fragmentation functions, precision determination of parton distribution functions in the *x* --> 1 limit, and tranverse momentum dependent parton distribution functions. Publications

Former:

Delphine Perrodin: (Joined group 2006, currently working as a postdoc with Andrea Lommen at Franklin & Marshall University) While at UA worked on effective theories of gravity and is now part of the NANOGRAV collaboration to detect gravitational waves using a pulsar timing array. Publications

Postdoc:

Former:

Masaoki Kusunoki: (2006-2008) Left the field.

Other Interests:

Mathematical Finance: Using path integrals to generalize the Weiner measure to account for fat tails in distributions, and developing a path integral based formalism to calculate the value of far out-of-the-money options.