Happy Birthday!

Born in 1994, and now a rising junior. Nice work, keep it up.

Now, some memories of one of the CDS founders ...
Jerry Marsden 1942-2010
... from math through mechanics to control and dynamical systems

BSc U Toronto 1965, PhD Princeton 1968 (Arthur Wightman)
1968-95: UCB – Cornell – UCB; 1995-2010: Caltech

Some more of the books:

Applications of Global Analysis in Math Phys, 1974
Props of Infinite Diml Hamiltonian Systs w P. Chernoff, 1974
The Hopf Bifn & its Applications w M. McCracken+, 1976
Math Fdns of Elasticity w T Hughes, 1983
Manifolds, Tensor Anal & Apps w R. Abraham, T. Ratiu, 1988
Lectures on Mechanics, 1992
A Math Intro to Fluid Mechanics w A. Chorin, 1993
Mechanics & Symmetry w T. Ratiu, 1994
Lagrangian Reduction by Stages w H. Cendra, T. Ratiu, 2001
Hamiltonian Reduction by Stages w Many Others, 2007
Dyn Sys, 3BP, Space Mission Design w Koon, Lo, Ross, 2011

> 400 papers & conf. procs.

48+ PhDs, 7 MScs, almost 40 postdocs, ??? collaborators, colleagues and friends.
Some of many things Jerry did:

Finite and infinite-dimensional dynamical systems, local and global bifurcations Melnikov methods; ODE, PDE, operator theory; Geometric mechanics, non-canonical Hamiltonian structures and brackets, Hamiltonian and Langrangian reduction theory*; Classical field theories, relativity; Quantum theory; Fluid mechanics, Lagrangian coherent structures; Geometry; Celestial mechanics, space mission design; Numerical methods, symplectic integrators, discrete & computational mechanics; Optimal control; Apologies for what I forgot ....

*Reduction theory synthesizes the work of Smale, Arnold (and their predecessors ...) into a bundle, with Smale as the base and Arnold as the fiber. – JEM.

I was fortunate to share in a small part of this:
A very short history of Dynamical Systems:

1880-1995: Poincaré, Birkhoff, Kolmogorov, Anosov, Arnold, Moser, Sinai, Smale, Thom, Takens, Marsden … . Invariant (center, inertial) manifolds, bifurcations local & global, homoclinic tangles and chaos, attractors, Focus on limit sets, $t \to \infty$ asymptotics.

>1995: Computer-aided proofs (Lorenz attr, CHOMP); Finite time behaviors (FTLE); Stochastic dynamics, pullback attractors; Dynamics on networks; Connecting dynamical systems & control theory; POD -> balanced POD; Data-driven models, Koopman operators; Apologies for all that wish I knew ....

8:30 – Dynamics:

Melvin Leok – Comp geom uncert propagn for Ham systems on a Lie group
Matt West – Atmospheric aerosols, stoch simuln, and data-driven analysis
Shane Ross – Dyn structure & its uses for insight, discovery, and control

10 - Break

10:30 - Fluids: Dennice Gayme, Beverley McKeon, Clancy Rowley, Bassam Bamieh

12 - Lunch, then Apps in Medicine & Grand Challenges.