

*Volume preserving diffeomorphisms and the Kahan method*

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Kahan's method is a special numerical integration method that works very well for certain quadratic differential equations. A modified measure and one or several modified integrals are preserved by this method for some special classes of quadratic vector fields. In this talk, we apply Kahan's method to a general vector field  $F$  and give a general condition on its Jacobian matrix  $F'$  guaranteeing that a modified measure is preserved. Connections to the discretization of the group of volume preserving diffeomorphisms arising in certain classes of partial differential equations will be discussed.