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**Jason Swanson\***, University of Central Florida, Department of Mathematics, 4000 Central Florida Blvd, P.O. Box 161364, Orlando, FL 32816. *A change of variable formula with Itô correction term.*

We consider the solution  $u(x, t)$  to a stochastic heat equation in one spatial dimension. For fixed  $x$ , the process  $F(t) = u(x, t)$  has a nontrivial quartic variation. It follows that  $F$  is not a semimartingale, so a stochastic integral with respect to  $F$  cannot be defined in the classical Itô sense. We show that for sufficiently differentiable functions  $g(x, t)$ , a stochastic integral  $\int g(F(t), t) dF(t)$  exists as a limit of discrete, midpoint style Riemann sums, where the limit is taken in distribution in the Skorohod space of càdlàg functions. Moreover, we show that this integral satisfies a change of variables formula with a correction term that is an ordinary Itô integral with respect to a Brownian motion that is independent of  $F$ . (Received March 07, 2011)