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James R Langenbrunner* (jr1@lanl.gov), MS F644, Los Alamos National Laboratory, Los Alamos, NM 87545. *Chain Rule Approach for Calculating the Time-derivative of Flux*. Preliminary report.

The reaction history (gamma-flux observable) is mathematically studied by using the chain rule for taking the total-time derivatives. That is, the total time-derivative of flux is written as the product of the ion temperature derivative with respect to time and the derivative of the flux with respect to ion temperature. Some equations are derived using the further simplification that the fusion reactivity is a parametrized function of ion temperature. Deuterium-tritium (D-T) fusion is used as the application with reactivity calculations from three established reactivity parametrizations. (Received February 06, 2018)