1038-65-251   **Alan Demlow*** (`demlow@ms.uky.edu`), Department of Mathematics, University of Kentucky, 715 Patterson Office Tower, Lexington, KY 40506-0027, and **Charalambos Makridakis**. *Sharply local pointwise a posteriori error estimates for parabolic problems.*

We prove pointwise a posteriori error estimates for semi- and fully-discrete finite element methods for approximating the solution u to a parabolic model problem. Our estimates may be used to bound $\|u - u_h\|_{L_\infty(D)}$, where D is an arbitrary subset of the space-time domain of definition of the given PDE. When implemented in an adaptive method, these estimates should allow for efficient and accurate computation of u on D by requiring only enough mesh refinement away from D in order to ensure that local solution quality is not polluted by global effects. (Received February 11, 2008)