1014-11-218 **Richard T. Bumby*** (bumby@math.rutgers.edu) and **Mary E. Flahive** (flahive@math.oregonstate.edud). *Resurrecting the divided cell algorithm for inhomogeneous Diophantine approximation.* Preliminary report.

The divided cell algorithm, developed by E.S. Barnes and H.P.F. Swinnerton-Dyer in the 1950s, calculates inhomogeneous minima of binary quadratic forms, and since their restriction to nonzero forms is unnecessary it also can be applied to the inhomogeneous approximation of real numbers. Jane Pitman later related sequences of divided cells to the regular continued fraction algorithm. This connection is best understood in the context of lattices: The sequence of continued fraction convergents contains all points for which the value of the homogeneous form is small, and the vertices in the sequence of divided cells contain all fundamental parallelograms whose vertices yield small values of the inhomogeneous form. Just as the theory of continued fractions identified the important convergents, we are able to identify all of the important vertices for the inhomogeneous problem. In particular, the chain of divided cells for every inhomogeneous problem based on the same quadratic form can be described in terms of the continued fractions of that form. Advances in symbolic computation and computer graphics allow an improved presentation of results in this area, but important examples require only a pencil and (surprisingly little) paper. (Received August 25, 2005)