1009-37-12   **V. S. Prasad*** (`vidhu_prasad@uml.edu`), Department of Mathematics, University of Massachusetts Lowell, 1 University Ave., Lowell, MA 01854, and **S Alpern**, London, England.
Multitowers, Conjugacy and Coding.

We consider three theorems in ergodic theory concerning a fixed aperiodic measure preserving transformation σ of a Lebesgue probability space $(X, \mathcal{A}, \mu)$ and show that each theorem is a corollary of any other. Two of these results concern the existence of a partition $\mathcal{P} = \{P_i\}$ with special properties. The third theorem asserts that the conjugates of σ are dense in the space of automorphisms. The first partition result is Alpern's generalization of the Rokhlin Lemma, the so-called Multiple Rokhlin Tower theorem stating that the space can be partitioned into denumerably many σ-columns (the i'th column given by P_i) with the measures of the columns prescribed in advance; the second partition result is a coding result which asserts that any mixing Markov chain $\mathbf{P} = (p(i,j))$ can be represented by a partition $\mathcal{P} = \{P_i\}$ and σ so that $p(i,j) = \mu(\sigma(P_i) \cap P_j)/\mu(P_i)$. (Received June 07, 2005)