1086-05-2316 **Mary K. Flagg*** (mflagg@math.uh.edu), Department of Mathematics, University of Houston, 641 Philip Guthrie Hoffman Hall, Houston, TX 77204-3008. *Using graph techniques to understand a nonsplit mixed p-adic module.* Preliminary report.

For a prime $p$, let $J_p$ be the ring of $p$-adic integers. A module over $J_p$ is a local abelian group. W. May proved that a mixed module of finite torsion-free rank over $J_p$ is determined by its endomorphism ring. The author has shown that in the case of reduced modules with unbounded torsion submodules the Jacobson radical of the endomorphism ring of a module of finite torsion-free rank is sufficient to determine the isomorphism class of the module. The question that this research leads to for a mixed module is how the endomorphisms reflect or do not reflect the structure of the extension of the torsion module by a torsion-free module. How are the torsion submodule and the torsion-free elements intertwined? In hopes of understanding this connection better, the author will survey some of the graphical techniques used to describe groups. Also, graphs of the endomorphism ring and automorphism group of a mixed abelian group will be examined for clues to the connection between torsion and torsion-free elements. (Received September 25, 2012)