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Ziyad AlSharawi* (zsharawi@aus.edu), Department of Mathematics and Statistics, American University of Sharjah, PO Box 26666, Sharjah, United Arab Emirates. *On the embedding of a discrete dynamical system into a dynamical system of higher dimension.* Preliminary report.

We consider second order difference equations of the form $x_{n+1} = F(x_n, x_{n-1})$, in which F is non-decreasing in one component and non-increasing in the other. Such equations are known as difference equations of mixed monotonicity. The embedding technique is known in studying the dynamics of this type of equations. When the obtained dynamical system assumes an invariant box, which could be the positive quadrant, the system can be embedded into a monotonic system of higher dimension, and the new system can be used to investigate the dynamics of the original system. In this talk, we focus on systems of mixed monotonicity that have compact invariant sets that are not necessarily boxes, then develop the embedding technique to address the issue of asymptotic behavior. (Received September 09, 2017)