1067-03-1867 **Meghan B Anderson***, Department of Mathematics, 970 Evans Hall, Berkeley, CA 94720-3840.

Solutions of linear equations in a model complete theory of valued D-fields.

Scanlon's model complete theory of valued D-fields combines difference and differential fields into one structure with good model theoretic properties; however some simple equations can never have solutions in this setting. I will show that the dimension of the space of solutions to a linear difference equation over the constants of such a field is determined by the structure induced on the residue field. (Received September 22, 2010)