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Calculating Effective Operators of Double Beta Decay in an Algebraic Model<sup>1</sup> ANTHONY CHARLES, University of Virginia — The shell model is one of the most commonly-used tools in calculating matrix elements of double-beta decay. However, the shell model does not account for certain physical phenomena, causing some inaccuracy in these matrix element calculations. Much work has gone into constructing effective Hamiltonians in order to compensate for these flaws, but very little work has gone into calculating other kinds of effective operators. We explore how to make shell model calculations of double-beta decay more accurate by finding effective double-beta decay transition operators. We use a solveable model of double-beta decay that accounts for two valence shells of nucleons. In this model, we carry out the Lee-Suzuki method in order to find effective double-beta decay operators in a smaller, one-shell space that reproduce the full result for small numbers of nucleons. We are the first to calculate any kind of effective three-body operators in this way, and we compare the relative significance of two-body and three-body effects in these effective operator calculations.

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> Anthony Charles University of Virginia

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