New Gadget Verification Code Description

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This document write up contains the information regarding the mathematical algorithm to calculate the New Gadget values over the entire space of BC4 36,864 Adinkras and how it is written and executed using Python 3. Specific Python version used in calculation was Python 3.5, but the code is also compatible with Python 2.7.

Software wise the code builds upon earlier developments/works by the author but with changes to the code that pertains to the final gadget calculation. To speed up Gadget calculation, multiprocessing feature has been added and is utilized within the code. The code also now produces a text output of the results which can be zip compressed for distribution/sharing of results.

Using the elemets of BC4 coxeter group, the script adinkra\_nxn\_constructor.py builds the the 384 L sign permutation matrices (4x4, row x col). These L sign permutation matrices serve as the building blocks of all Adinkras, given that any two of them satisfy conditions of certain Garden algebra equations . The same script also handles the process of assembling all possible Adinkras using the L sign permutation matrices. Using 384 L matrices, the script creates 36,864 Adinkras with N=4 (4 colors), four open-nodes and four closed nodes