

Script S1. Calculation of minimal angular errors for a C5/C8 symmetry combination to match an arbitrary combination of C5/C12/C8 symmetries

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# this is a python script
from collections import Counter
from math import fmod

diffs = Counter()
for s5i in range(0, 5):
    for s12i in range(0, 12):
        for s8i in range(0, 8):
            # all possible combinations of 5, 12, and 8 fold rotations
            ang = s5i*72 + s12i*30 + s8i*45

            err_min = 360
            for s5i2 in range(0, 5):
                for s12i2 in range(0, 1):
                    for s8i2 in range(0, 8):
                        # all possible combinations of 5 and 8 fold rotations
                        ang2 = s5i2*72 + s12i2*30 + s8i2*45
                        err = fmod(abs(ang2-ang), 360)
                        if err>180: err = 360-err
                        if err<err_min:
                            err_min = err
                    # 5/8 fold combination that bests match the 5/12/8 combination
                    diffs[err_min] += 1

print diffs
#output: Counter({3.0: 320, 0.0: 160})
```