Rings − 1 round

4v4

$$e^{-4i\gamma}\left(\sin^4(\beta)+\cos^4(\beta)\right)-2e^{4i\gamma}\sin^2(\beta)\cos^2(\beta)+4i\sin(\beta)\cos^3(\beta)-4\sin^2(\beta)\cos^2(\beta)-4i\sin^3(\beta)\cos(\beta)$$

p = 0.5398544578511101

4v3 1

$$e^{-4i\gamma}\left(i\sin(\beta)\cos^3(\beta)-i\sin^3(\beta)\cos(\beta)\right)+e^{4i\gamma}\left(i\sin(\beta)\cos^3(\beta)-i\sin^3(\beta)\cos(\beta)\right)$$
$$+\sin^4(\beta)+\cos^4(\beta)+2i\sin(\beta)\cos^3(\beta)-6\sin^2(\beta)\cos^2(\beta)-2i\sin^3(\beta)\cos(\beta)$$

p = 0.5

4v2 2

$$-2e^{-4i\gamma}\sin^2(\beta)\cos^2(\beta)-2e^{4i\gamma}\sin^2(\beta)\cos^2(\beta)+\sin^4(\beta)+\cos^4(\beta)$$
$$+4i\sin(\beta)\cos^3(\beta)-2\sin^2(\beta)\cos^2(\beta)-4i\sin^3(\beta)\cos(\beta)$$

p = 0.4999999999999997

4v1 1 1 1

$$e^{4i\gamma}\left(\sin^4(\beta)+\cos^4(\beta)\right)-2e^{-4i\gamma}\sin^2(\beta)\cos^2(\beta)+4i\sin(\beta)\cos^3(\beta)-4\sin^2(\beta)\cos^2(\beta)-4i\sin^3(\beta)\cos(\beta)$$

p = 0.5398544578511104

5v5

$$e^{-5i\gamma}\left(\cos^5(\beta)+i\sin^5(\beta)\right)+e^{3i\gamma}\left(-5\sin^2(\beta)\cos^3(\beta)-5i\sin^3(\beta)\cos^2(\beta)\right)$$
$$+e^{-i\gamma}\left(5i\sin(\beta)\cos^4(\beta)-5\sin^2(\beta)\cos^3(\beta)-5i\sin^3(\beta)\cos^2(\beta)+5\sin^4(\beta)\cos(\beta)\right)$$

p = 0.4105035493177127

5v4 1

$$e^{-5i\gamma}\left(\sin^4(\beta)\cos(\beta)+i\sin(\beta)\cos^4(\beta)\right)$$
$$+e^{3i\gamma}\left(2i\sin(\beta)\cos^4(\beta)-3\sin^2(\beta)\cos^3(\beta)-3i\sin^3(\beta)\cos^2(\beta)+2\sin^4(\beta)\cos(\beta)\right)$$
$$+e^{-i\gamma}\left(i\sin^5(\beta)+\cos^5(\beta)+2i\sin(\beta)\cos^4(\beta)-7\sin^2(\beta)\cos^3(\beta)-7i\sin^3(\beta)\cos^2(\beta)+2\sin^4(\beta)\cos(\beta)\right)$$

p = 0.3985485156786475

5v3 2

$$e^{-5i\gamma}\left(-\sin^2(\beta)\cos^3(\beta)-i\sin^3(\beta)\cos^2(\beta)\right)$$
$$+e^{3i\gamma}\left(i\sin(\beta)\cos^4(\beta)-4\sin^2(\beta)\cos^3(\beta)-4i\sin^3(\beta)\cos^2(\beta)+\sin^4(\beta)\cos(\beta)\right)$$
$$+e^{-i\gamma}\left(i\sin^5(\beta)+\cos^5(\beta)+4i\sin(\beta)\cos^4(\beta)-5\sin^2(\beta)\cos^3(\beta)-5i\sin^3(\beta)\cos^2(\beta)+4\sin^4(\beta)\cos(\beta)\right)$$

p = 0.5150158139390923

5v2 1 1 1

$$e^{-5i\gamma}\left(-\sin^2(\beta)\cos^3(\beta)-i\sin^3(\beta)\cos^2(\beta)\right)$$
$$+e^{-i\gamma}\left(3i\sin(\beta)\cos^4(\beta)-7\sin^2(\beta)\cos^3(\beta)-7i\sin^3(\beta)\cos^2(\beta)+3\sin^4(\beta)\cos(\beta)\right)$$
$$+e^{3i\gamma}\left(i\sin^5(\beta)+\cos^5(\beta)+2i\sin(\beta)\cos^4(\beta)-2\sin^2(\beta)\cos^3(\beta)-2i\sin^3(\beta)\cos^2(\beta)+2\sin^4(\beta)\cos(\beta)\right)$$

p = 0.8789062500000002

6v6

$$e^{-6i\gamma}\left(\cos^6(\beta) - \sin^6(\beta)\right) - 2ie^{6i\gamma}\sin^3(\beta)\cos^3(\beta)$$
$$+ e^{2i\gamma}\left(-9\sin^2(\beta)\cos^4(\beta) - 12i\sin^3(\beta)\cos^3(\beta) + 9\sin^4(\beta)\cos^2(\beta)\right)$$
$$+ e^{-2i\gamma}\left(6i\sin(\beta)\cos^5(\beta) - 6\sin^2(\beta)\cos^4(\beta) - 6i\sin^3(\beta)\cos^3(\beta) + 6\sin^4(\beta)\cos^2(\beta) + 6i\sin^5(\beta)\cos(\beta)\right)$$

p = 0.30171820009611067

6v5 1

$$e^{-6i\gamma}\left(i\sin(\beta)\cos^5(\beta) + i\sin^5(\beta)\cos(\beta)\right) + e^{6i\gamma}\left(\sin^4(\beta)\cos^2(\beta) - \sin^2(\beta)\cos^4(\beta)\right)$$
$$+ e^{2i\gamma}\left(3i\sin(\beta)\cos^5(\beta) - 6\sin^2(\beta)\cos^4(\beta) - 12i\sin^3(\beta)\cos^3(\beta) + 6\sin^4(\beta)\cos^2(\beta) + 3i\sin^5(\beta)\cos(\beta)\right)$$
$$+ e^{-2i\gamma}\left(-\sin^6(\beta) + \cos^6(\beta) + 2i\sin(\beta)\cos^5(\beta) - 8\sin^2(\beta)\cos^4(\beta)\right.$$
$$\left. - 8i\sin^3(\beta)\cos^3(\beta) + 8\sin^4(\beta)\cos^2(\beta) + 2i\sin^5(\beta)\cos(\beta)\right)$$

p = 0.2621557189304736

6v4 2

$$-2ie^{6i\gamma}\sin^3(\beta)\cos^3(\beta) + e^{-6i\gamma}\left(\sin^4(\beta)\cos^2(\beta) - \sin^2(\beta)\cos^4(\beta)\right)$$
$$+ e^{2i\gamma}\left(2i\sin(\beta)\cos^5(\beta) - 9\sin^2(\beta)\cos^4(\beta) - 8i\sin^3(\beta)\cos^3(\beta) + 9\sin^4(\beta)\cos^2(\beta) + 2i\sin^5(\beta)\cos(\beta)\right)$$
$$+ e^{-2i\gamma}\left(-\sin^6(\beta) + \cos^6(\beta) + 4i\sin(\beta)\cos^5(\beta) - 5\sin^2(\beta)\cos^4(\beta)\right.$$
$$\left. - 10i\sin^3(\beta)\cos^3(\beta) + 5\sin^4(\beta)\cos^2(\beta) + 4i\sin^5(\beta)\cos(\beta)\right)$$

p = 0.4260966260907454

6v3 1 1 1

$$e^{6i\gamma}\left(i\sin(\beta)\cos^5(\beta) + i\sin^5(\beta)\cos(\beta)\right) + e^{-6i\gamma}\left(\sin^4(\beta)\cos^2(\beta) - \sin^2(\beta)\cos^4(\beta)\right)$$
$$+ e^{-2i\gamma}\left(3i\sin(\beta)\cos^5(\beta) - 6\sin^2(\beta)\cos^4(\beta) - 12i\sin^3(\beta)\cos^3(\beta) + 6\sin^4(\beta)\cos^2(\beta)\right.$$
$$\left. + 3i\sin^5(\beta)\cos(\beta)\right) + e^{2i\gamma}\left(-\sin^6(\beta) + \cos^6(\beta) + 2i\sin(\beta)\cos^5(\beta)\right.$$
$$\left. - 8\sin^2(\beta)\cos^4(\beta) - 8i\sin^3(\beta)\cos^3(\beta) + 8\sin^4(\beta)\cos^2(\beta) + 2i\sin^5(\beta)\cos(\beta)\right)$$

p = 0.26215571893047385

6v2 1 2 1

$$-2ie^{6i\gamma}\sin^3(\beta)\cos^3(\beta) + e^{-6i\gamma}\left(\sin^4(\beta)\cos^2(\beta) - \sin^2(\beta)\cos^4(\beta)\right)$$
$$+ e^{-2i\gamma}\left(2i\sin(\beta)\cos^5(\beta) - 6\sin^2(\beta)\cos^4(\beta) - 14i\sin^3(\beta)\cos^3(\beta) + 6\sin^4(\beta)\cos^2(\beta)\right.$$
$$\left. + 2i\sin^5(\beta)\cos(\beta)\right) + e^{2i\gamma}\left(-\sin^6(\beta) + \cos^6(\beta) + 4i\sin(\beta)\cos^5(\beta)\right.$$
$$\left. - 8\sin^2(\beta)\cos^4(\beta) - 4i\sin^3(\beta)\cos^3(\beta) + 8\sin^4(\beta)\cos^2(\beta) + 4i\sin^5(\beta)\cos(\beta)\right)$$

p = 0.37499999999999933