H= -1j\*np.array([[1,1], [1,-1]])/np.sqrt(2)

H\_0=DDCDADDDDCDADADCDDCDCDDADDADDC 0.009954680293882474

[[-0.0011879635168507985+0.7098765432098778j, -0.013440272937081388+0.7041968767372222j],

[0.013440272937082387+0.7041968767372219j, -0.0011879635168517977-0.7098765432098773j]]

Delta=H\*H\_0’=

v

[[0.9964742736567079+0.04583232787312699j, 0.007984220314282173+0.06981885052075659j],

[-0.00798422031428214+0.06981885052075659j, 0.9964742736567078-0.04583232787312699j]]

V\_0=CDCDDCDADCDCDCDCDDCDDADCDDDDDC 0.015643269910662536

[[0.997942386831278+0.03445094198868082j, 0.014549522246636425+0.05208105763119211j],

[-0.01454952224663638+0.0520810576311919j, 0.9979423868312776-0.03445094198868226j]]

w

[[0.9964742736567079-0.019318403842800758j, 0.08157560808874782+0.003352816465905961j],

[-0.08157560808874775+0.0033528164659059473j, 0.9964742736567079+0.01931840384280075j]]

W\_0=DADDCDDCDDDDDADDCBCBCBBABCCDAD 0.01834843698329846

[[0.99788935415491-0.020576131687244273j, 0.06048122821686849-0.011639617797309876j],

[-0.06048122821686809-0.011639617797310153j, 0.9978893541549103+0.02057613168724355j]]

vwv'w'

[[0.9999009043402475-0.01034372519325728j, -0.004016130677646398+0.008663691076141716j],

[0.004016130677646586+0.008663691076141676j, 0.9999009043402471+0.010343725193257287j]]

H\_1=

[[-0.000487792173887165+0.7087537065085154j, -0.0053594839471204254+0.7054354835851934j],

[0.0053594839471222105+0.7054354835851935j, -0.00048779217388738444-0.7087537065085142j]]

np.float64(0.004151361707622768)

delta=H\*H\_1’=

v

[[0.9985311932961433+0.029520540578372813j, 0.006631549714604753+0.04494459085277977j],

[-0.006631549714604732+0.04494459085277974j, 0.9985311932961431-0.029520540578372813j]]

V\_0=DDDDAADCDABCDDCBABBCDAADADDADC 0.007875996234362814

[[-0.9978893541549094-0.03703703703703687j, -0.01008020470281188-0.0523782800878929j],

[0.0100802047028118-0.052378280087892096j, -0.9978893541549088+0.03703703703703698j]]

DELTA=V\*V\_0’=

A

[[0.9972115270363165-0.05278767586415911j, -0.014342668183740744+0.05076336762005948j],

[0.01434266818374076+0.05076336762005948j, 0.9972115270363165+0.05278767586415911j]]

A\_0=DDADCDCDCDDCDDDDDADCDCDCDDDDDC 0.019353050956317095

[[-0.997942386831278+0.03207501495497905j, -0.002909904449327722-0.05544112586546146j],

[0.0029099044493274932-0.05544112586546152j, -0.9979423868312783-0.03207501495497789j]]

B

[[0.9972115270363165-0.022489694268582428j, 0.0710807400731447-0.00330339041856359j],

[-0.0710807400731447-0.0033033904185636176j, 0.9972115270363164+0.022489694268582418j]]

B\_0=DABABBCBADADCBCDCBCCCBAAADCDAB 0.02368853869754845

[[0.9979423868312755+0.00989969597375924j, 0.06304792973542629-0.00616012509616215j],

[-0.0630479297354259-0.006160125096161928j, 0.997942386831276-0.009899695973759198j]]

ABA'B'

[[0.9999379686833167-0.007418702108925996j, -0.003566225302058919-0.007503577919647937j],

[0.0035662253020589505-0.007503577919647987j, 0.9999379686833165+0.007418702108925989j]]

V \_1=

[[-0.9983146733980183-0.029795960654929406j, -0.010590773734643224-0.048660549920531156j],

[0.010590773734641958-0.04866054992053099j, -0.9983146733980194+0.029795960654929503j]]

np.float64(0.003847502027851903)

w

[[0.9985311932961433-0.01969641484974855j, 0.050168461355739276+0.0055346853428807075j],

[-0.050168461355739345+0.005534685342880763j, 0.9985311932961431+0.01969641484974856j]]

W\_0’=DADCBCDDABCCBABCBABADDAAAABCDA 0.009487692327667873

[[-0.9979423868312755+0.03207501495497922j, -0.055288184537219454-0.0050401023514054615j],

[0.055288184537219495-0.005040102351405042j, -0.9979423868312758-0.032075014954979386j]]

DELTA=W\*W\_0’=

A

[[0.996639949238084+0.016334493055211147j, 0.021913970668517087+0.07721252365308559j],

[-0.021913970668517087+0.07721252365308559j, 0.9966399492380841-0.016334493055211147j]]

A\_0=DDADCDDDDADADADABADADABCBABCCD 0.008131468500484136

[[0.9967013906380591+0.008916323731138986j, 0.013440272937081034+0.07953738828161394j],

[-0.013440272937081103+0.07953738828161439j, 0.9967013906380582-0.00891632373113857j]]

B

[[0.996639949238084-0.035213792751541545j, -0.06885006906098104+0.02699015326113008j],

[0.06885006906098104+0.02699015326113008j, 0.996639949238084+0.035213792751541545j]]

B\_0=CBADABADDDDADABCCCDCBABADADCDC 0.005798815832859712

[[-0.9967013906380576+0.03772290809327772j, 0.06384129645113928-0.032978917092376756j],

[-0.06384129645113887-0.032978917092377255j, -0.996701390638058-0.03772290809327755j]]

ABa'B'

[[0.9999099836942958+0.012425164235373338j, -0.005063489643789136-2.957744316785249e-05j],

[0.005063489643789138-2.957744316786637e-05j, 0.9999099836942961-0.012425164235373341j]]

W\_1=

[[-0.9985250883115918+0.020458765384826886j, -0.04991434134887292-0.006135589537236196j],

[0.04991434134887379-0.0061355895372378075j, -0.9985250883115911-0.020458765384827136j]]

np.float64(0.000709534507017159)

vwv'w'

[[0.9999827661959733-0.004134648595516845j, -0.0023463379299344576+0.003444806287773723j],

[0.0023463379299343283+0.0034448062877737917j, 0.9999827661959729+0.004134648595516835j]]

H\_2=

[[1.844075847257196e-05+0.706899660991244j, 0.0003235960661475846+0.7073137664686268j],

[-0.00032359606614781964+0.707313766468628j, 1.8440758470341647e-05-0.7068996609912427j]]

np.float64(0.00030886575708438365)

delta=h\*h\_2’=

v

[[0.9998907935013785-0.007118514504007634j, 0.011109938134937238+0.006655606439513906j],

[-0.011109938134937235+0.00665560643951385j, 0.9998907935013788+0.007118514504007634j]]

V\_0=CDDDCDCDDDDDDDDDDDDDDDDDDDDDCD 0.010450191319695091

[[-1.0000000000000033-1.887379141862766e-15j, 2.289302755841258e-15+1.1102230246251565e-15j],

[-2.0227171885686194e-15+1.0547118733938987e-15j, -1.0000000000000029+3.1086244689504383e-15j]]

DELTA=V\*V\_0’=

A

[[0.9962984486855083+0.03968132774152619j, -0.010063798647607617+0.07558778560256568j],

[0.01006379864760761+0.07558778560256568j, 0.9962984486855083-0.03968132774152619j]]

A\_0=DCDCDCDCDDDDCDCDADDCDCBCDCDADD 0.010713120979486483

[[0.9958847736625535+0.048310516351944485j, -0.02230926744484208+0.07336148978157098j],

[0.022309267444842077+0.07336148978157142j, 0.9958847736625529-0.048310516351945804j]]

B

[[0.9962984486855083+0.06522089778231485j, 0.048628853792721055-0.0277645496654354j],

[-0.04862885379272108-0.02776454966543551j, 0.9962984486855082-0.06522089778231485j]]

B\_0=DDCDDDDCDDCDCDCDCDCDCDDDDCCCDC 0.0121261156728747

[[-0.9958847736625538-0.07840559211217019j, -0.04073866229058184+0.020160409405624535j],

[0.04073866229058219+0.02016040940562465j, -0.9958847736625533+0.07840559211217218j]]

ABA'B'

[[0.9998907935013818-0.007118514503898936j, 0.011109938134766599+0.006655606439411689j],

[-0.011109938134766704+0.006655606439411477j, 0.9998907935013813+0.007118514503898915j]]

V\_1=

[[-0.9998689960743565+0.0056052108062818184j, -0.012115270710004235-0.009153825250805199j],

[0.012115270710005267-0.009153825250806005j, -0.9998689960743545-0.005605210806280578j]]

np.float64(0.0021843024061941594)

DELTA=V\*V\_1’=

A

[[0.9992274340492158-0.03182181687625818j, -0.008605040616736417+0.021397670202581792j],

[0.008605040616736385+0.02139767020258182j, 0.9992274340492158+0.031821816876258194j]]

A\_0=CDDCDDCBADADABBCBBADCDDCCDDDDD 0.02137615198723758

[[0.9978893541549099-0.061728395061728863j, -0.01008020470281144+0.01745942669596373j],

[0.010080204702811492+0.01745942669596351j, 0.9978893541549099+0.06172839506172825j]]

DELTA=A\*A\_0’=

X

[[0.9924136123482739+0.026987485399076777j, 0.046032430534067276-0.1107606112154085j],

[-0.04603243053406729-0.11076061121540852j, 0.992413612348274-0.026987485399076777j]]

X\_0=DDDCCCCDCDDDDADCDDCDCDDCBCDDCC 0.018089214973754045

[[-0.9943254636043576-0.0061728395061732555j, -0.04536092116265223+0.09602684682780308j],

[0.045360921162652355+0.09602684682780308j, -0.9943254636043575+0.006172839506175309j]]

Y

[[0.9924136123482739-0.029152123053862083j, 0.11264266609222692+0.03971152884160396j],

[-0.11264266609222694+0.03971152884160392j, 0.992413612348274+0.02915212305386211j]]

Y\_0=ADDDDCDCDCDCDDADDCDCDDDDCDCDDC 0.012205201682745859

[[0.9943254636043577-0.02674897119341607j, 0.09576194467671112+0.03782875784125522j],

[-0.09576194467671145+0.0378287578412555j, 0.9943254636043574+0.026748971193414628j]]

XYX'Y'

[[0.9995430601262184+0.029860599694839757j, 0.0022507918169483625+0.004116974080074477j],

[-0.002250791816948325+0.004116974080074422j, 0.999543060126219-0.029860599694839774j]]

A\_1=

[[0.9990408316638874-0.03935473538458261j, -0.007074344142495423+0.017848672951011578j],

[0.007074344142494687+0.017848672951011425j, 0.9990408316638864+0.039354735384581944j]]

np.float64(0.005988242432937894)

B

[[0.9992274340492158-0.013331253595132118j, 0.03661693139836224-0.005100299596118046j],

[-0.03661693139836225-0.005100299596118074j, 0.9992274340492158+0.013331253595132125j]]

B\_0=ABADDADCCBCDCBADDCDCCCBCBAADAB 0.017707740700625398

[[0.9979423868312753-0.024947233853873374j, 0.05819808898654757-0.010080204702812068j],

[-0.05819808898654737-0.010080204702811513j, 0.9979423868312765+0.02494723385387293j]]

DELTA=B\*B\_0’=

X

[[0.9937196468174935+0.0386673056534684j, 0.029135111655691284+0.10088234866034784j],

[-0.02913511165569129+0.10088234866034784j, 0.9937196468174935-0.0386673056534684j]]

X\_0=CBCBCDCDCDCDADCDDDCDDDDDCDDDDA 0.010977080903550223

[[0.9943254636043579+0.04320987654321029j, 0.015120307054216717+0.09602684682780267j],

[-0.015120307054216645+0.0960268468278022j, 0.9943254636043575-0.04320987654321157j]]

Y

[[0.9937196468174936-0.09806981036759085j, -0.028402089186190922+0.045791889601115576j],

[0.028402089186190915+0.04579188960111563j, 0.9937196468174934+0.09806981036759091j]]

Y\_0=DCDAAABAAABBCBBCDCCCDADCDDDDCD 0.01845099213307245

[[0.9907615730538026-0.11522633744855965j, -0.04536092116265118+0.05528818453721879j],

[0.04536092116265104+0.055288184537218954j, 0.9907615730538029+0.11522633744855945j]]

XYX'Y'

[[0.9996864359192796+0.01169641591259063j, -0.021604395808054632+0.00484497425980486j],

[0.021604395808054608+0.004844974259805013j, 0.9996864359192792-0.011696415912590616j]]

B\_1=

[[0.9993562609925154-0.010534541312029766j, 0.03333416901107523-0.008057309151045433j],

[-0.03333416901107539-0.008057309151045444j, 0.9993562609925162+0.01053454131202928j]]

np.float64(0.003698555823851632)

ABA'B'

[[0.9999952288229995-0.0015340472264148107j, -0.00103332051368619-0.00247412187662759j],

[0.0010333205136861057-0.0024741218766275892j, 0.9999952288229994+0.0015340472264148176j]]

V\_2=

[[-0.9998963322949671+0.006720070597296521j, -0.010983495153014678-0.00644423374407911j],

[0.010983495153017504-0.00644423374407949j, -0.9998963322949647-0.00672007059729526j]]

np.float64(0.00033125095219707043)

w

[[0.9998907935013787+0.009827423483498743j, -0.0003126958249122869+0.01103290715000621j],

[0.0003126958249122791+0.011032907150006266j, 0.9998907935013787-0.009827423483498743j]]

W\_0=CDDDDDDCCDDDDDDCCDDDDDDCDDDDDD 0.010450191319695091

[[-1.0000000000000036-6.938893903907228e-16j, 9.50353934986419e-18+4.996003610813204e-16j],

[2.0331163696948083e-17+9.43689570931383e-16j, -1.0000000000000027+2.4980018054066022e-15j]]

Delta=w\*w\_0’=

a

[[0.9962984486855139+0.06757220954856002j, 0.01852319960995223-0.04980249712387451j],

[-0.0185231996099522-0.04980249712387451j, 0.9962984486855139-0.06757220954856002j]]

A\_0= BBCBCDCBABABCDCDADDADCCCDDDDAA 0.012780663013842708

[[-0.9958847736625522-0.06890188397736208j, -0.0029099044493271845+0.05880119409973315j],

[0.0029099044493266987+0.05880119409973283j, -0.9958847736625517+0.06890188397736241j]]

b

[[0.9962984486855139-0.017207142648708304j, 0.08385593043095652+0.007842086473876173j],

[-0.08385593043095653+0.007842086473876173j, 0.9962984486855139+0.017207142648708318j]]

B\_0=AADABADCBCDDCDDCBCDADDDCCDADCD 0.010073361591788708

[[-0.9958847736625527+0.030887051438128366j, -0.08438722903049466-0.011760238819946589j],

[0.0843872290304939-0.011760238819946478j, -0.9958847736625527-0.03088705143812806j]]

aba'b'

[[0.9998907935013815+0.009827423483332178j, -0.00031269582490705633+0.011032907149820918j],

[0.0003126958249070749+0.011032907149820921j, 0.9998907935013817-0.00982742348333216j]]

W\_1=

[[-0.9998783285826758-0.011057094627994486j, -0.0010852584230470852-0.010949470456261691j],

[0.001085258423044647-0.010949470456261488j, -0.9998783285826737+0.011057094627996233j]]

np.float64(0.001317855122076048)

vwv'w'

[[0.9999999046019445+0.0002418565287435892j, 0.0002928167556383035-0.00021577736117892217j],

[-0.00029281675563830887-0.0002157773611789239j, 0.9999999046019448-0.00024185652874359267j]]

Delta=w\*w\_1’=

a

[[0.999533959256426+0.0008203544046303628j, -0.0004401755419010114+0.03051225257689849j],

[0.00044017554190101175+0.030512252576898435j, 0.999533959256426-0.000820354404630361j]]

A\_0=CDDDDDDCCDDDDDDCCDDDDDDCDDDDDD 0.02158797682903444

[[-1.0000000000000036-6.938893903907228e-16j, 9.50353934986419e-18+4.996003610813204e-16j],

[2.0331163696948083e-17+9.43689570931383e-16j, -1.0000000000000027+2.4980018054066022e-15j]]

DEDLA=A\*A\_0’=

X

[[0.992338145589546+0.12179247504925247j, 0.016869062664890938+0.012125698086553297j],

[-0.016869062664890928+0.01212569808655331j, 0.992338145589546-0.12179247504925247j]]

X\_0=AADCBADDCDADDDDADCDDDDDCDDDDCB 0.011104733154155623

[[0.9938271604938296+0.11048060706714923j, 0.008729713347982698+0.0050401023514051735j],

[-0.008729713347982976+0.0050401023514055066j, 0.9938271604938291-0.11048060706714995j]]

Y

[[0.992338145589546-0.015588258529818134j, 0.12187510811716484-0.012979561831509306j],

[-0.1218751081171649-0.012979561831509327j, 0.9923381455895461+0.015588258529818128j]]

Y\_0=DADDCDADADDDDCDCDCDAADCDCDDCDD 0.011887785479173695

[[0.9938271604938294-0.015443525719064474j, 0.10766646462511109-0.021840443522758712j],

[-0.10766646462511158-0.021840443522758657j, 0.9938271604938294+0.01544352571906367j]]

XYX'Y'

[[0.9995339592564298+0.0008203544046265845j, -0.00044017554189945283+0.03051225257678339j],

[0.0004401755418993854+0.03051225257678338j, 0.99953395925643-0.0008203544046265845j]]

A\_1=

[[-0.9996985833137099-0.00141129639294727j, -0.0023688649575629717-0.024395475848809894j],

[0.00236886495756446-0.0243954758488102j, -0.9996985833137084+0.0014112963929491156j]]

np.float64(0.004779224809527602)

b

[[0.999533959256426-0.022495230767991092j, 0.02061588927062321+0.0009022169636864752j],

[-0.02061588927062321+0.0009022169636865307j, 0.9995339592564259+0.022495230767991096j]]

B\_0=CDDDCDDDCCDDDDDDDDDCDDDDDDCDDD 0.021587976829037014

[[-1.000000000000003-9.43689570931383e-16j, -1.1359639761748033e-15+0.0j],

[1.3614860171537057e-15+2.7755575615628914e-16j, -1.0000000000000029+2.3592239273284576e-15j]]

DELTA=B\*B\_0’=

X

[[0.9923381455895423-0.002667983401817793j, 0.014151341759941559+0.12270951959350695j],

[-0.014151341759941559+0.12270951959350695j, 0.9923381455895424+0.002667983401817793j]]

X\_0=DABCBCDADCDDCDCBBCCDDADAADABAD 0.011662812018362506

[[0.9917695473251034-0.009503708134809552j, -4.354155924701786e-16+0.12768259290227763j],

[6.245004513516506e-17+0.127682592902278j, 0.9917695473251038+0.009503708134809247j]]

Y

[[0.9923381455895424+0.09373714772317018j, 0.08016491083647558-0.0072068727762327756j],

[-0.08016491083647559-0.007206872776232831j, 0.9923381455895424-0.09373714772317018j]]

Y\_0=CDCDCDCBAAAAAAADADDCBBABADABAD 0.015532096941709138

[[-0.9895736095369512-0.11316872427983596j, -0.08904180820816741+0.002909904449328371j],

[0.08904180820816818+0.002909904449328149j, -0.9895736095369514+0.11316872427983496j]]

XYX'Y'

[[0.9995339592564291-0.022495230767917984j, 0.02061588927055399+0.0009022169636839113j],

[-0.020615889270553998+0.0009022169636837725j, 0.9995339592564293+0.022495230767917998j]]

B\_1=

[[-0.9993240660365149+0.026059509471774732j, -0.025716780339460153-0.0033106215908275073j],

[0.02571678033946247-0.003310621590828744j, -0.9993240660365162-0.02605950947177336j]]

np.float64(0.00472057413758422)

aba'b'

[[0.9999982632578782-0.0012142619426323796j, -0.0014121844966788516+6.916725603256122e-05j],

[0.001412184496678845+6.916725603257554e-05j, 0.9999982632578778+0.001214261942632383j]]

W\_2=

[[-0.9998885039664889-0.0098458538057795j, 0.0002074850557288364-0.011224782782901701j],

[-0.00020748505572346348-0.011224782782904221j, -0.9998885039664868+0.009845853805781336j]]

np.float64(0.0001552907039188338)

H\_3=

[[-4.5053760604853965e-07+0.7070996773032104j, 2.694017175925204e-07+0.707113884998587j],

[-2.6940172205824073e-07+0.7071138849985702j, -4.5053761251000174e-07-0.7070996773032147j]]

np.float64(7.100673025708506e-06)

T=(0.9238795325112867-0.3826834323650897j)\*np.array([[1, 0], [0, np.exp(1j\*np.pi/4)]])

T\_0=BCDCBCDDDDADADCCCDCDDCDDDDDDDA 0.0159548011593086

[[-0.9159198714921856+0.40123456790123607j, 0.0100802047028127+2.1337098754514727e-16j],

[-0.01008020470281326-3.677613769070831e-16j, -0.9159198714921859-0.4012345679012346j]]

v

[[0.9943431258412612+0.007913164939044925j, 0.048937917428999764+0.09393726710198658j],

[-0.048937917428999764+0.09393726710198663j, 0.9943431258412612-0.007913164939044925j]]

V\_0=BADADCDDCDCCDDDDDDCDDDDADDDDAD 0.009496537343355468

[[0.9943254636043579+0.006172839506172562j, 0.06048122821687063+0.08729713347982065j],

[-0.06048122821687006+0.08729713347982071j, 0.9943254636043575-0.0061728395061734775j]]

w

[[0.9943431258412612+0.037077740874349896j, -0.08951889432775673+0.04351271977503346j],

[0.08951889432775673+0.04351271977503349j, 0.9943431258412612-0.037077740874349924j]]

W\_0=DADCDDDDCDCDADADDDDCDCDDDDCDAB 0.004092633085485606

[[0.9938271604938294+0.04157872308978697j, -0.09311694237847425+0.043680887045515926j],

[0.09311694237847418+0.04368088704551548j, 0.9938271604938298-0.04157872308978766j]]

vwv'w'

[[0.9997454443199675+0.02018504482586258j, 0.009312894808416995-0.003857527334600791j],

[-0.009312894808416967-0.0038575273346006175j, 0.9997454443199675-0.020185044825862572j]]

T\_1=

[[-0.9240515266587166+0.3822656673154456j, -0.0008970575468054119+0.0009648623487331469j],

[0.0008970575468044968+0.0009648623487335606j, -0.9240515266587169-0.38226566731544404j]]

np.float64(0.000984830238135515)

Delta=T\*T\_1’=

v

[[0.9996517492908902+0.023060468403545448j, 0.005869911817951025+0.011407851328006036j],

[-0.005869911817951015+0.011407851328006036j, 0.9996517492908902-0.023060468403545448j]]

V\_0=CDDDCDCDDDDDDDDDDDDDDDDDDDDDCD 0.01866147660574053

[[-1.0000000000000033-1.887379141862766e-15j, 2.289302755841258e-15+1.1102230246251565e-15j],

[-2.0227171885686194e-15+1.0547118733938987e-15j, -1.0000000000000029+3.1086244689504383e-15j]]

DELTA=V\*V\_0’=

A

[[0.9933802612016857+0.06682880537388072j, -0.036255481088093414-0.08611101856465303j],

[0.036255481088093434-0.08611101856465303j, 0.9933802612016858-0.06682880537388075j]]

A\_0=CCCDADABBCBCDCBBCCBCDDDCCDDCBB 0.010050244882493963

[[-0.9938271604938276-0.05345835825829898j, 0.03491885339192848+0.09072184232530245j],

[-0.03491885339192821+0.09072184232530212j, -0.9938271604938278+0.05345835825829989j]]

B

[[0.9933802612016857-0.014206173995926524j, 0.10069730011379636-0.053421859056575746j],

[-0.10069730011379635-0.053421859056575746j, 0.9933802612016857+0.014206173995926469j]]

B\_0=ADDDDDDDCDDDDDDDCDDCDCDDADCDDD 0.0077488237175550355

[[-0.994325463604358+0.018518518518518184j, -0.09072184232530525+0.05237828008789308j],

[0.09072184232530518+0.05237828008789275j, -0.9943254636043579-0.01851851851851699j]]

ABA'B'

[[0.9996517492908943+0.023060468403432607j, 0.005869911817924794+0.011407851327952252j],

[-0.0058699118179246935+0.011407851327952294j, 0.9996517492908944-0.023060468403432604j]]

V\_1=

[[-0.9997221391148566-0.02161003592991808j, -0.005694737559723782-0.00749805807315122j],

[0.00569473755972409-0.00749805807315252j, -0.9997221391148561+0.02161003592991928j]]

np.float64(0.002951768824379523)

w

[[0.9996517492908902-0.008725726691183378j, 0.024377913892292193+0.005095012034734059j],

[-0.02437791389229223+0.005095012034734087j, 0.9996517492908902+0.008725726691183364j]]

W\_0=CDDDDDDCDDDCCDDDCCDDDDDDDDDDDD 0.018661476605743507

[[-1.0000000000000036-4.996003610813204e-16j, 3.499726447289914e-16+1.1102230246251565e-15j],

[-7.303127241286053e-16+1.4432899320127035e-15j, -1.0000000000000027+2.6367796834847468e-15j]]

DELTA=W\*W\_0’=

A

[[0.9933802612016875+0.028737173588608222j, 0.001233371001588568+0.11121290529869993j],

[-0.0012333710015885726+0.11121290529869993j, 0.9933802612016875-0.028737173588608222j]]

A\_0=ADADCCCBABBBCDCCBADADADCDCDDDD 0.008350118947153415

[[-0.9938271604938274-0.03207501495497875j, 0.008729713347981938-0.10584214937951947j],

[-0.008729713347982088-0.10584214937951913j, -0.9938271604938282+0.032075014954979275j]]

B

[[0.9933802612016875+0.10726147946815696j, 0.03006417102989676-0.028049550753161623j],

[-0.030064171029896752-0.028049550753161623j, 0.9933802612016875-0.10726147946815696j]]

B\_0=CDDDCBBADCDCDADDCDDCDDDDDDCDDD 0.015058574673195622

[[0.994325463604358+0.09259259259259273j, 0.04536092116265236-0.02618914004394668j],

[-0.04536092116265253-0.02618914004394679j, 0.9943254636043575-0.09259259259259396j]]

ABA'B'

[[0.9996517492908937-0.008725726691138455j, 0.024377913892166148+0.005095012034709065j],

[-0.02437791389216616+0.005095012034709051j, 0.9996517492908936+0.008725726691138469j]]

W\_1=

[[-0.9997215118893814+0.010559675705342657j, -0.019747966089124828-0.0074437725628894785j],

[0.019747966089124637-0.007443772562888161j, -0.9997215118893815-0.010559675705340506j]]

np.float64(0.003893669764333144)

vwv'w'

[[0.9999990301094023-0.00045178388688022104j, -0.0004595362689904631+0.0012347056297028775j],

[0.00045953626899040496+0.0012347056297029348j, 0.9999990301094023+0.0004517838868802141j]]

T\_2=

[[-0.923983796633885+0.3824315287445334j, -6.854777965448612e-05+0.00025432547825125166j],

[6.854777965389604e-05+0.00025432547825165303j, -0.9239837966338845-0.3824315287445315j]]

np.float64(0.00026805465193481727)

delta=T\*t\_2’=

v

[[0.9999052238779803+0.009356467810868947j, -0.00039124309857587695+0.010091912626849442j],

[0.000391243098575881+0.010091912626849442j, 0.9999052238779803-0.009356467810868947j]]

V\_0=CDDDDDDCCDDDDDDCCDDDDDDCDDDDDD 0.009735302872360066

[[-1.0000000000000036-6.938893903907228e-16j, 9.50353934986419e-18+4.996003610813204e-16j],

[2.0331163696948083e-17+9.43689570931383e-16j, -1.0000000000000027+2.4980018054066022e-15j]]

DELTA=V\*V\_0’=

A

[[0.9965521066768488+0.06401205739205006j, 0.01898904996046197-0.04925211841099342j],

[-0.018989049960461975-0.049252118410993403j, 0.9965521066768488-0.06401205739205007j]]

A\_0=DDCBCCDDDDCDADCDABCBCCBADDCDCD 0.018927223323514465

[[0.9943254636043568+0.0843621399176954j, 0.010080204702810937-0.06401789788520218j],

[-0.010080204702811658-0.06401789788520251j, 0.9943254636043563-0.0843621399176963j]]

B

[[0.9965521066768488-0.016773292134393374j, 0.08071968425137535+0.009321369173416028j],

[-0.08071968425137536+0.009321369173416028j, 0.9965521066768488+0.016773292134393367j]]

B\_0=BCDCDDADABBADCDADADDDDCDAAADAD 0.019323140297761134

[[0.9978893541549098-0.006858710562414785j, 0.0638412964511388-0.009699681497757962j],

[-0.06384129645113863-0.009699681497758073j, 0.9978893541549095+0.006858710562414591j]]

ABA'B'

[[0.9999052238779839+0.009356467810695303j, -0.00039124309856872604+0.010091912626663794j],

[0.0003912430985687012+0.010091912626663826j, 0.9999052238779839-0.009356467810695313j]]

V\_1=

[[-0.9999054980285341-0.008898121489674468j, -0.0010627942774723525-0.010425397575372058j],

[0.0010627942774735462-0.010425397575370664j, -0.9999054980285319+0.008898121489676268j]]

np.float64(0.0011035212532625775)

DELTA=V\*V\_1’=

A

[[0.9996097701798388-0.004799249878077699j, -0.008675837192199363+0.02611521416017809j],

[0.008675837192199363+0.026115214160178035j, 0.9996097701798388+0.004799249878077699j]]

A\_0=CDDDDDDCCDDDDDDCCDDDDDDCDDDDDD 0.01975423549920694

[[-1.0000000000000036-6.938893903907228e-16j, 9.50353934986419e-18+4.996003610813204e-16j],

[2.0331163696948083e-17+9.43689570931383e-16j, -1.0000000000000027+2.4980018054066022e-15j]]

DELTA=A\*A\_0’=

X

[[0.9929912618554924+0.10469321753539496j, 0.03183789895722046+0.04465458846203385j],

[-0.03183789895722046+0.04465458846203385j, 0.9929912618554922-0.10469321753539493j]]

X\_0=BCCBCDCBBCBABADADDDAAABADCDCDA 0.013599783830655349

[[-0.9907615730538022-0.12345679012345706j, -0.035280716459839885-0.04364856673990987j],

[0.0352807164598401-0.043648566739910064j, -0.9907615730538024+0.1234567901234574j]]

Y

[[0.9929912618554924-0.03975072142292202j, 0.11035161973485386+0.014517370522542067j],

[-0.11035161973485388+0.014517370522542067j, 0.9929912618554924+0.039750721422922033j]]

Y\_0= ADDCCDDCDDCDDCCCBBADDADADCDAAD 0.014038530646760548

[[0.9938271604938285-0.05345835825829938j, 0.09602684682780305+0.015120307054216797j],

[-0.09602684682780392+0.015120307054217574j, 0.9938271604938291+0.053458358258298797j]]

XYX'Y'

[[0.9996097701798429-0.004799249878056952j, -0.008675837192160727+0.026115214160062322j],

[0.008675837192160628+0.02611521416006234j, 0.9996097701798426+0.004799249878056966j]]

A\_1=

[[-0.9995603149424613+0.003153779688539473j, 0.010635942478177939-0.02749740339408038j],

[-0.010635942478176109-0.027497403394081712j, -0.9995603149424624-0.0031537796885375874j]]

np.float64(0.002056997540414015)

B

[[0.9996097701798389-0.02636859379087171j, -0.006133674829870555-0.006883506053106947j],

[0.006133674829870562-0.0068835060531070025j, 0.9996097701798388+0.026368593790871697j]]

B\_0=DDDCDDDDCCDDDDDDDDDDDDDDDDDDDC 0.01975423549920694

[[-1.0000000000000027-6.106226635438361e-16j, -1.5428896290614582e-15+1.6731625058429039e-15j],

[1.8204453852177476e-15+2.153903177438795e-15j, -1.0000000000000033+1.942890293094024e-15j]]

DELTA=B\*B\_0’=

X

[[0.9929912618554854-0.041459758467242674j, -0.008757810280151969+0.11033015483350861j],

[0.008757810280151964+0.11033015483350861j, 0.9929912618554853+0.041459758467242674j]]

X\_0=CCBCDCBABABCDDABAADADDCDCBCBCC 0.005581484084403234

[[-0.993827160493827+0.04157872308978833j, 0.008729713347981963-0.1024820811452492j],

[-0.008729713347981567-0.10248208114524918j, -0.9938271604938274-0.04157872308978783j]]

Y

[[0.9929912618554853-0.013683323089548498j, 0.11731890789774027+0.004170659127737869j],

[-0.11731890789774026+0.004170659127737869j, 0.9929912618554853+0.013683323089548496j]]

Y\_0=DADDCDDDCDDDDCDADDADCDDDDADCDD 0.013347716172730254

[[0.9943254636043584-0.006172839506173089j, 0.10584214937951882-0.008729713347982726j],

[-0.10584214937951854-0.008729713347982837j, 0.9943254636043579+0.006172839506172714j]]

XYX'Y'

[[0.999609770179842-0.026368593790781308j, -0.006133674829851108-0.006883506053080998j],

[0.006133674829851111-0.0068835060530809565j, 0.9996097701798418+0.02636859379078129j]]

B\_1=

[[-0.9997263128744929+0.021994826835892486j, 0.004401928537233615+0.006644543927114737j],

[-0.004401928537232985+0.0066445439271155225j, -0.9997263128744932-0.02199482683589117j]]

np.float64(0.0033316263055839096)

V\_2=

[[-0.9999063737595354-0.009301315684507976j, 0.00019877876291123664-0.010034427171954343j],

[-0.00019877876290496415-0.010034427171953889j, -0.999906373759536+0.009301315684509853j]]

np.float64(0.00014729240373888148)

ABA'B'

[[0.9999987822408445+0.00047310993621927505j, -0.0014461538381543258-0.00034687590329770743j],

[0.0014461538381543495-0.0003468759032979234j, 0.9999987822408443-0.0004731099362192716j]]

w

[[0.9999052238779803+0.0013127114261362073j, 0.013687545150461852-0.0006864094927467104j],

[-0.013687545150461864-0.0006864094927467104j, 0.9999052238779804-0.0013127114261362073j]]

W\_0=CDDDCDCDDDDDDDDDDDDDDDDDDDDDCD 0.009735302872354364

[[-1.0000000000000033-1.887379141862766e-15j, 2.289302755841258e-15+1.1102230246251565e-15j],

[-2.0227171885686194e-15+1.0547118733938987e-15j, -1.0000000000000029+3.1086244689504383e-15j]]

Delta=w\*w\_0’=

a

[[0.9965521066768448+0.004294057955525319j, 0.01060956351617296+0.08217601174438616j],

[-0.010609563516172957+0.08217601174438627j, 0.9965521066768449-0.004294057955525319j]]

A\_0=DDCDADDDDDDDDDCDDDCDCDDDDCDCDD 0.020368323730009633

[[-0.9943254636043584-0.01851851851851738j, -1.4606371667724716e-15-0.10475656017578372j],

[1.1345091532888318e-15-0.10475656017578322j, -0.9943254636043586+0.018518518518518434j]]

b

[[0.9965521066768448+0.08159689483095184j, -0.014843696801086256-0.002347359615955724j],

[0.014843696801086242-0.0023473596159556687j, 0.9965521066768448-0.08159689483095184j]]

B\_0=DADCCDADDDCDDCDDCDADADCDDCBCBC 0.014668385118670612

[[-0.9978893541549102-0.06172839506172806j, 0.020160409405622855-2.931682674400804e-16j],

[-0.02016040940562265-2.1684043449710089e-16j, -0.9978893541549108+0.0617283950617295j]]

aba'b'

[[0.9999052238779836+0.0013127114261114875j, 0.01368754515022535-0.0006864094927338071j],

[-0.01368754515022535-0.0006864094927334853j, 0.9999052238779842-0.0013127114261114736j]]

W\_1=

[[-0.9999071706298025-0.002849229370702751j, -0.013318767049731011-0.0003774379345607479j],

[0.013318767049731397-0.0003774379345595246j, -0.9999071706298038+0.00284922937070397j]]

np.float64(0.0013469706372648297)

vwv'w'

[[0.9999999281467038-0.00027262866012699367j, 3.399624493913357e-05+0.0002611981160041455j],

[-3.39962449391491e-05+0.00026119811600414393j, 0.9999999281467041+0.00027262866012699367j]]

Delta=w\*w\_1’=

a

[[0.9995236605144252-0.017685541832680535j, 0.001830822090291066+0.025225419171981706j],

[-0.001830822090291053+0.02522541917198172j, 0.9995236605144252+0.017685541832680538j]]

A\_0=CBCBCBCBCBAABCCDDADADCBCBADCDD 0.010314711730416691

[[-0.9990773176717602+0.030864197530863724j, -0.006720136468540938-0.02909904449327355j],

[0.006720136468540983-0.029099044493273662j, -0.99907731767176-0.030864197530863308j]]

DELTA=A\*A\_0’=

X

[[0.9963465247540345+0.0009585431625903085j, -0.06547265035426073+0.054827145294575025j],

[0.06547265035426073+0.05482714529457505j, 0.9963465247540345-0.000958543162590364j]]

X\_0=CDDDDCBADCDADDDDDDDDDDDADDDDDC 0.021862708645744154

[[0.9943254636043579+0.0185185185185196j, -0.09072184232530235+0.05237828008789292j],

[0.09072184232530187+0.052378280087892054j, 0.994325463604358-0.01851851851852032j]]

Y

[[0.9963465247540345-0.041193498584147836j, -0.048384166330390985-0.05705848520131898j],

[0.04838416633039101-0.057058485201318954j, 0.9963465247540346+0.04119349858414778j]]

Y\_0=CDDDCDDDCCDDDDDDDCDCDCDADDCDDD 0.018467913550324688

[[-0.9943254636043584+0.0555555555555548j, 0.04536092116265107+0.07856742013183832j],

[-0.04536092116265092+0.07856742013183882j, -0.9943254636043581-0.05555555555555322j]]

XYX'Y'

[[0.999893606721919+0.013296515084951482j, -0.004623872627637785-0.0038206969458973034j],

[0.004623872627637789-0.0038206969458971854j, 0.9998936067219192-0.013296515084951475j]]

A\_1=

[[-0.9997372370485549+0.010598333378284436j, -0.0025989614811080487-0.02015880917527625j],

[0.0025989614811091416-0.0201588091752739j, -0.9997372370485546-0.010598333378283985j]]

np.float64(0.006186061492332101)

b

[[0.9995236605144252+0.006676404678223689j, 0.030026989799157782+0.0025015147446776492j],

[-0.030026989799157768+0.0025015147446776492j, 0.9995236605144252-0.006676404678223689j]]

B\_0=CDDDDDDCCDDDDDDCCDDDDDDCDDDDDD 0.02182520299038903

[[-1.0000000000000036-6.938893903907228e-16j, 9.50353934986419e-18+4.996003610813204e-16j],

[2.0331163696948083e-17+9.43689570931383e-16j, -1.0000000000000027+2.4980018054066022e-15j]]

DELTA=B\*B\_0’=

v

[[0.9922536222986189+0.03543480636363949j, -0.0020559102827382115+0.11904997591831129j],

[0.0020559102827382037+0.11904997591831129j, 0.9922536222986189-0.03543480636363949j]]

V\_0=ADDDDADDDDDDDCDCDCDDCCDDCDCDCD 0.010787737250898263

[[-0.9938271604938298-0.03207501495497858j, 0.008729713347980773-0.10584214937951919j],

[-0.008729713347980887-0.10584214937951908j, -0.99382716049383+0.03207501495497987j]]

w

[[0.9922536222986189+0.11316501787004375j, -0.03804186537415518-0.03434012586752022j],

[0.03804186537415517-0.03434012586752022j, 0.9922536222986188-0.11316501787004375j]]

W\_0=CCBCDADDCBBCBBCDDADADDCBADCDCD 0.0061064792389033985

[[-0.9919495365706542-0.11591220850480041j, 0.031920648225569885+0.03976869414080775j],

[-0.031920648225569656+0.03976869414080786j, -0.9919495365706537+0.1159122085048012j]]

vwv'w'

[[0.999523660514429+0.006676404678198508j, 0.030026989799047443+0.0025015147446694544j],

[-0.03002698979904746+0.002501514744669482j, 0.9995236605144286-0.0066764046781984665j]]

B\_1=

[[-0.9996053590237555-0.005575013058335945j, -0.027201127169947-0.004259591657991494j],

[0.02720112716994752-0.004259591657990825j, -0.9996053590237544+0.005575013058337727j]]

np.float64(0.0024795233574240565)

aba'b'

[[0.9999981856701015-0.0015506780857487464j, 0.00037122099960810166-0.001042232674922028j],

[-0.00037122099960805195-0.0010422326749219965j, 0.9999981856701013+0.0015506780857487516j]]

W\_2=

[[-0.9999059067086389-0.0017576271647499783j, -0.013603060852917407+0.00021262987139153872j],

[0.013603060852921043+0.00021262987139885573j, -0.9999059067086374+0.0017576271647512724j]]

np.float64(0.000463440990094214)

T\_3=

[[-0.9238805984805118+0.3826808588629397j, -1.0617427702780727e-06+3.2464499140044244e-06j],

[1.0617427940743182e-06+3.2464499209095454e-06j, -0.92388059848051-0.38268085886293723j]]

np.float64(3.0802542051666107e-06)