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

H\_0=CDADDADCBADDADDDDCDADADADADADD 0.006267914054499407

[[-0.006577808748212649+0.7108108443439516j, 0.0027296659563368353+0.7033471581792882j],

[-0.0027296659563376124+0.7033471581792878j, -0.0065778087482114-0.7108108443439514j]] DELTA=H\*H\_0’=

v

[[0.9977814968559876-0.047955266599425506j, -0.02825236540688397+0.03652643954888918j],

[0.02825236540688393+0.03652643954888929j, 0.9977814968559876+0.047955266599425506j]]

V\_0=ADDDDADDDDDDCDDADADCDADAABCCCD 0.005185746946845187

[[-0.9974875006296805+0.04822150533932036j, 0.03544361275547958-0.03790940286004435j],

[-0.035443612755479886-0.03790940286004407j, -0.9974875006296811-0.048221505339321874j]]

w

[[0.9977814968559877-0.04157293999635507j, 0.04933738097578455-0.016419440621851022j],

[-0.049337380975784495-0.016419440621850967j, 0.9977814968559875+0.04157293999635504j]]

W\_0=AADADCCDDDCBBAAAAAAAADDDDADDDC 0.006717640581675707

[[-0.9974875006296797+0.0482215053393204j, -0.0509570729855766+0.009836118294746177j],

[0.050957072985576335+0.009836118294745504j, -0.9974875006296795-0.04822150533932118j]]

vwv'w'

[[0.9999607132534059-0.0027210478630569426j, -0.005277623099579847-0.006581378479181905j],

[0.005277623099579839-0.006581378479181572j, 0.9999607132534052+0.0027210478630569634j]]

H\_1=

[[0.0011609480703192766+0.706968907319877j, -0.000561723763313426+0.7072434522488991j],

[0.00056172376331204+0.7072434522489003j, 0.0011609480703199115-0.7069689073198767j]]

np.float64(0.0009222315816059224)

Delta=H\*H\_1=

v

[[0.9996738887230647+0.024189194097073236j, -0.004151226056328031-0.0070545316264802455j],

[0.004151226056328044-0.0070545316264802385j, 0.9996738887230647-0.024189194097073236j]]

V\_0=DDDDDDDDDDDDDDDDDDDDDDDDDDDDDD 0.01805855135196945

[[-1.000000000000003-1.1796119636642288e-15j, -1.6688179249492328e-15-2.1649348980190553e-15j],

[-1.7275460475023567e-15-1.7763568394002505e-15j, -1.000000000000004-2.192690473634684e-15j]]

Delta=v\*v\_0’=

a

[[0.9935948248056687+0.009763688905718826j, -0.10202756228870707+0.047585407760868476j],

[0.10202756228870709+0.0475854077608685j, 0.9935948248056687-0.009763688905718881j]]

A\_0=DDCDDADDADADCDCDDDDDDADADDCCCD 0.006677280393072129

[[0.9943818806145388+0.007732677949200267j, -0.09796373628796667+0.03934447317898343j],

[0.09796373628796695+0.0393444731789831j, 0.9943818806145398-0.0077326779491978526j]]

b

[[0.9935948248056689-0.047965782324793205j, -0.04698185967218809-0.09089176369234545j],

[0.04698185967218812-0.09089176369234539j, 0.9935948248056689+0.047965782324793205j]]

B\_0=DCDAADDDCBADCCDDCBAADDDCCCCDDA 0.022155140939490607

[[0.9949750012593594-0.021372596203472538j, -0.05810343123719994-0.07868894635796607j],

[0.05810343123719949-0.0786889463579663j, 0.9949750012593591+0.021372596203473537j]]

aba'b'

[[0.9996738887230666+0.02418919409695703j, -0.004151226056306466-0.007054531626448521j],

[0.004151226056306561-0.0070545316264483265j, 0.9996738887230667-0.024189194096957033j]]

V\_1=

[[-0.999787169376318-0.020500078003016748j, 0.0013093193136898497+0.001910087775602841j],

[-0.0013093193136927486+0.0019100877756049307j, -0.9997871693763203+0.02050007800301343j]]

np.float64(0.004907348903044825)

w

[[0.9996738887230647+0.002630910668989947j, 0.024784015333981127-0.005563011619834336j],

[-0.024784015333981158-0.005563011619834343j, 0.9996738887230647-0.002630910668989947j]]

W\_0=DDDDDDDDDDDDDDDDDDDDDDDDDDDDDD 0.01805855135196945

[[-1.000000000000003-1.1796119636642288e-15j, -1.6688179249492328e-15-2.1649348980190553e-15j],

[-1.7275460475023567e-15-1.7763568394002505e-15j, -1.000000000000004-2.192690473634684e-15j]]

Delta=w\*w\_0’=

a

[[0.993594824805669-0.01117652272362768j, 0.0380141476335491+0.10582690602533357j],

[-0.038014147633549114+0.10582690602533346j, 0.9935948248056691+0.01117652272362768j]]

A\_0= DCDADDDDAADDDDDCDDDADDCCDADDCD 0.011524198987951272

[[0.991869381244219-0.015465355898397315j, 0.035443612755479754+0.12124233432258891j],

[-0.03544361275547915+0.12124233432258913j, 0.9918693812442183+0.015465355898399702j]]

b

[[0.993594824805669+0.10951372487116254j, -0.020453879709138485+0.018913143289236545j],

[0.020453879709138492+0.018913143289236545j, 0.9935948248056692-0.10951372487116255j]]

B\_0=DCCCDDAADABBADCCBCCDDADCDDDDDD 0.010213884402957906

[[-0.9943818806145379-0.10417568862784159j, 0.007146358251623394-0.017350244037202922j],

[-0.007146358251624137-0.01735024403720309j, -0.9943818806145384+0.1041756886278407j]]

aba'b'

[[0.9996738887230674+0.0026309106689759165j, 0.024784015333862246-0.005563011619808954j],

[-0.02478401533386227-0.0055630116198092695j, 0.9996738887230681-0.0026309106689759304j]]

W\_1=

[[-0.999637192046338+0.0008343705108942506j, -0.026476218109993083+0.004878317145644734j],

[0.02647621810998629+0.004878317145644528j, -0.9996371920463384-0.0008343705108976233j]]

np.float64(0.0027696459197378933)

vwv'w'

[[0.9999991494889097+0.00042371556972077996j, 0.00019413258049627417+0.0012181129318276631j],

[-0.0001941325804963134+0.0012181129318276631j, 0.9999991494889097-0.0004237155697207804j]]

H\_2=

[[0.0002937316500908827+0.7070972733925227j, 0.00010398766839985645+0.707116220199495j],

[-0.00010398766839844688+0.7071162201995133j, 0.00029373165009431886-0.707097273392512j]]

np.float64(0.00022053472192941036)

DELTA=H\*H\_2’=

v

[[0.9999220261592227+0.005534480826656571j, -0.0016177926278436155-0.011076726530330566j],

[0.0016177926278436133-0.011076726530330566j, 0.9999220261592225-0.005534480826656557j]]

V\_0=DDDDDDDDDDDDDDDDDDDDDDDDDDDDDD 0.008830279767589695

[[-1.000000000000003-1.1796119636642288e-15j, -1.6688179249492328e-15-2.1649348980190553e-15j],

[-1.7275460475023567e-15-1.7763568394002505e-15j, -1.000000000000004-2.192690473634684e-15j]]

DELTA=V\*V\_0’=

A

[[0.9968731360090658-0.06482411854973832j, -0.02822813588679304-0.03528394396969525j],

[0.028228135886793057-0.03528394396969525j, 0.9968731360090658+0.06482411854973835j]]

A\_0=CBBBADDCDDAABCCDABABBCCBCCBBCC 0.010834424399837247

[[0.9965278112669287-0.07029135667850633j, -0.037418817597072204-0.024316221694069245j],

[0.03741881759707241-0.024316221694070012j, 0.996527811266928+0.07029135667850517j]]

B

[[0.9968731360090658-0.023647947931062285j, 0.07377135366254296-0.015572817371823283j],

[-0.07377135366254294-0.015572817371823255j, 0.9968731360090658+0.023647947931062258j]]

B\_0=DDABCDAADDDCCDADAADDAADDDDADCC 0.006622594137938334

[[0.9971209319117518-0.023464361610609552j, 0.07181979073516398-0.006417829571278788j],

[-0.07181979073516312-0.006417829571278951j, 0.9971209319117519+0.023464361610611106j]]

ABA'B'

[[0.9999220261592252+0.005534480826540816j, -0.0016177926278083876-0.011076726530103106j],

[0.0016177926278084713-0.01107672653010307j, 0.9999220261592252-0.00553448082654083j]]

V\_1=

[[-0.9999218363155327-0.0035526337695782986j, 0.0009920408990957397+0.011946376334889191j],

[-0.0009920408991014322+0.01194637633489095j, -0.9999218363155324+0.0035526337695749874j]]

np.float64(0.0015930432816763723)

DELTA=V\*V\_1’=

A

[[0.999436615445348+0.013688595801279235j, 0.030140604199065182-0.00553335618338896j],

[-0.030140604199065203-0.00553335618338896j, 0.999436615445348-0.01368859580127918j]]

A\_0=DDDDDDDDDDCCDDADDAADADDCCCCDDC 0.01741849977158945

[[0.9984471899924307+0.029802529288385615j, 0.04700666330239097+0.0023219925522901877j],

[-0.047006663302389826+0.0023219925522893724j, 0.9984471899924314-0.02980252928838345j]]

DELTA=A\*A\_0’=

X

[[0.9938225499018453-0.03772960474036084j, -0.026764025471852797+0.10088063824774379j],

[0.02676402547185279+0.10088063824774379j, 0.9938225499018454+0.03772960474036084j]]

X\_0=CDDCCDDAAADDCCBCCCBCDDDDDDCDDD 0.012689298291833382

[[0.9918693812442179-0.03823246237329565j, -0.03666435648232709+0.1157114269846598j],

[0.036664356482326584+0.11571142698465903j, 0.9918693812442174+0.038232462373296694j]]

Y

[[0.9938225499018454-0.06878518852153027j, 0.08705412156468555-0.0026300314166327055j],

[-0.08705412156468556-0.002630031416632761j, 0.9938225499018453+0.06878518852153029j]]

Y\_0=BBCDDDCCDDDADDADDDADADDDDDCDDA 0.01219014501292871

[[-0.9937887599697179+0.07872128976341669j, -0.0775673011504798+0.013045033080385286j],

[0.07756730115048069+0.013045033080385862j, -0.9937887599697182-0.07872128976341891j]]

XYX'Y'

[[0.9996965958657065-0.01644848986043669j, -0.01668968607982248-0.007590637284561418j],

[0.016689686079822446-0.007590637284561511j, 0.9996965958657065+0.01644848986043672j]]

A\_1=

[[0.9995628867136609+0.014881796533350427j, 0.02474097986177477-0.006360153464070479j],

[-0.024740979861775807-0.006360153464073995j, 0.9995628867136616-0.014881796533348318j]]

np.float64(0.003954693991458202)

B

[[0.999436615445348-0.01099963151995581j, 0.010489136932796957+0.029923867062563697j],

[-0.010489136932796966+0.029923867062563725j, 0.999436615445348+0.01099963151995581j]]

B\_0=BCCDDADDCBCBCDCBBCBBADDCDDDCCD 0.01745369976897915

[[-0.9984471899924297+0.0047790577966620035j, -0.020684613640127608-0.05150258402601848j],

[0.020684613640127567-0.051502584026017706j, -0.9984471899924293-0.004779057796662087j]]

DELTA=B\*B\_0=

X

[[0.9938100273878117-0.09297856366958761j, -0.048579762719601266+0.03655985250906621j],

[0.048579762719601266+0.03655985250906621j, 0.9938100273878115+0.0929785636695876j]]

X\_0=ADDCCBCBBBCBBADDDADCCDDDDDDDDD 0.013701562496237572

[[0.9918693812442176-0.10009388596689053j, -0.061299379805638286+0.04918059147372911j],

[0.0612993798056395+0.04918059147372922j, 0.9918693812442181+0.10009388596689144j]]

Y

[[0.9938100273878115-0.055954815007601647j, 0.09450273111514663-0.01673086825841255j],

[-0.09450273111514669-0.01673086825841255j, 0.9938100273878117+0.05595481500760166j]]

Y\_0=ADADDAAADDDABADABABCCCBBAADDAD 0.011874111730239452

[[-0.9946084325414297+0.06298960610200713j, -0.08198399344576762+0.008062273828043864j],

[0.08198399344576672+0.008062273828043864j, -0.9946084325414299-0.06298960610200739j]]

XYX'Y'

[[0.999695368364374-0.006127439860166069j, -0.01062361250869576-0.021418772346771222j],

[0.010623612508695658-0.021418772346771225j, 0.999695368364374+0.006127439860166055j]]

B\_1=

[[-0.9994654672512787+0.012061716316422628j, -0.009273232393076626-0.028936169972432216j],

[0.009273232393072373-0.028936169972432254j, -0.9994654672512799-0.012061716316422862j]]

np.float64(0.0013384367612059669)

ABA'B'

[[0.9999974622131035+0.001973353278764583j, -0.0006524680668710036+0.00086932710338785j],

[0.000652468066870943+0.0008693271033879124j, 0.9999974622131033-0.0019733532787645815j]]

V\_2=

[[-0.9999234367605482-0.005155500097490974j, 0.0016447469742795822+0.011128173397036959j],

[-0.001644746974291809+0.011128173397045684j, -0.9999234367605511+0.005155500097487734j]]

np.float64(0.0002711103569546063)

w

[[0.9999220261592225+8.037882485964487e-05j, 0.012361985610914726-0.0017653477377316956j],

[-0.012361985610914745-0.0017653477377316982j, 0.9999220261592225-8.037882485965875e-05j]]

W\_0=DDDDDDDDDDDDDDDDDDDDDDDDDDDDDD 0.008830279767589695

[[-1.000000000000003-1.1796119636642288e-15j, -1.6688179249492328e-15-2.1649348980190553e-15j],

[-1.7275460475023567e-15-1.7763568394002505e-15j, -1.000000000000004-2.192690473634684e-15j]]

DELTA=W\*W\_0=

A

[[0.9968731360090638-0.005319053599741011j, 0.017306435703396524+0.0769164849398496j],

[-0.017306435703396537+0.07691648493984965j, 0.9968731360090638+0.005319053599741004j]]

A\_0=DDAADDADDADDDAADDCCDDADADCCCBC 0.006937101409830042

[[-0.9968078448490034-0.004449858577284915j, -0.017708813858053146-0.07772205039672359j],

[0.017708813858053084-0.0777220503967237j, -0.9968078448490025+0.0044498585772836385j]]

B

[[0.9968731360090637+0.07851392500007079j, -0.005835469612949187+0.006742520221284409j],

[0.005835469612949194+0.006742520221284354j, 0.9968731360090637-0.0785139250000708j]]

B\_0=DAAADADADDCDDADADDADDCDDDAADDA 0.0053264887372011524

[[-0.996301259340039-0.08505945744119392j, 0.0063918971368796445-0.010384266380334451j],

[-0.006391897136879637-0.01038426638033425j, -0.9963012593400387+0.08505945744119192j]]

ABA'B'

[[0.9999220261592258+8.03788248568138e-05j, 0.012361985610668287-0.0017653477376980507j],

[-0.012361985610668305-0.0017653477376980498j, 0.9999220261592259-8.037882485682768e-05j]]

W\_1=

[[-0.9999081695976165-0.0001633563740296372j, -0.013418546955285014+0.0018889902773764837j],

[0.013418546955281286+0.001888990277376852j, -0.9999081695976145+0.00016335637402627696j]]

np.float64(0.0007545484120028809)

DELTA=W\*W\_1’=

A

[[0.9997331912573773+0.0030709493605078145j, 0.001909609099753395+0.02281378884472951j],

[-0.0019096090997533994+0.022813788844729455j, 0.9997331912573773-0.0030709493605078145j]]

A\_0=ADAADDCBBCCDAABAAAAABCBCCCBCBB 0.011333328705947537

[[-0.9996334312820704-0.01208080837315996j, 0.011274872044269553-0.02144608105619228j],

[-0.011274872044269045-0.021446081056192112j, -0.9996334312820705+0.012080808373160987j]]

DELTA=A\*A\_0’=

x

[[0.9959850031092878+0.007301295982461847j, 0.005331831855875853+0.08906254110134526j],

[-0.005331831855875855+0.08906254110134526j, 0.9959850031092878-0.007301295982461847j]]

X\_0=DDDDDDDCDADDDADADAADDCBBCCBCBC 0.007682379640482048

[[-0.9963012593400382+0.00043092737270039594j, -0.011851229049554136-0.08510677592924595j],

[0.011851229049553713-0.08510677592924612j, -0.9963012593400382-0.0004309273727016172j]]

y

[[0.9959850031092878+0.07633396308062036j, 0.04589017483260549-0.009005082766474215j],

[-0.0458901748326055-0.009005082766474215j, 0.9959850031092878-0.07633396308062036j]]

Y\_0=ADCCDDDDDCCBBAADCCCCBBADCCDDCD 0.01379924464227488

[[-0.9943818806145376-0.08871033272944273j, -0.053398560439271055+0.021994229141779897j],

[0.05339856043927051+0.021994229141779842j, -0.9943818806145376+0.0887103327294419j]]

xyx'y'

[[0.9998715556604424-0.009305937642968443j, 0.01297102372427745+0.00142276115183077j],

[-0.012971023724277457+0.0014227611518307839j, 0.9998715556604424+0.009305937642968443j]]

A\_1=

[[-0.9997674474797867-0.0017738179131577513j, -0.003493247383780515-0.021206172509031482j],

[0.0034932473837788734-0.021206172509031736j, -0.9997674474797865+0.001773817913158733j]]

np.float64(0.0018406607473542402)

B

[[0.9997331912573774-0.022767288361707542j, 0.0026690875665275615+0.0028412762198760655j],

[-0.002669087566527558+0.0028412762198760655j, 0.9997331912573773+0.02276728836170755j]]

B\_0=DDCCBAAADDADAABBCCBBADDADABCCD 0.011687523212228483

[[-0.9992668625641423+0.03544344183044766j, -0.010808589432166997-0.009626744356919903j],

[0.010808589432166322-0.009626744356919681j, -0.9992668625641423-0.0354434418304478j]]

DELTA=B\*B\_0’=

x

[[0.9958592636920931-0.012942730912126443j, -0.07558587873228936+0.04882199884730104j],

[0.07558587873228935+0.04882199884730104j, 0.9958592636920931+0.012942730912126499j]]

X\_0=DDDCDCDDDCDDDADDADDADADDDADCCC 0.0060680781102563685

[[0.9953415699772893-0.016593538406810493j, -0.0829165586699732+0.046310450835850836j],

[0.0829165586699727+0.04631045083585115j, 0.995341569977289+0.016593538406812547j]]

y

[[0.9958592636920931-0.061202177663857604j, -0.0287633740022839-0.060755976527814004j],

[0.02876337400228391-0.06075597652781395j, 0.9958592636920931+0.06120217766385766j]]

Y\_0=ADDDDDDDDCDDDDAAADDDDADDDCCDAD 0.01418695947214234

[[0.9949750012593607-0.07141953918691797j, -0.013538255388504214-0.06885282806322052j],

[0.013538255388503825-0.06885282806322057j, 0.994975001259361+0.07141953918692043j]]

xyx'y'

[[0.9998634018011631+0.012688403964456897j, -0.008257045103832485-0.006633502060967814j],

[0.00825704510383246-0.0066335020609677164j, 0.9998634018011633-0.012688403964456932j]]

B\_1=

[[-0.999757791053501+0.021989029437733218j, -0.0009095587996096343-0.00012047828417134122j],

[0.000909558799610902-0.00012047828417112612j, -0.9997577910535014-0.021989029437733343j]]

np.float64(0.0023563716785000247)

ABA'B'

[[0.9999994306566957-8.330892301394721e-05j, -0.0010565136995272278+0.0001245982014214178j],

[0.001056513699527228+0.00012459820142131763j, 0.9999994306566955+8.330892301394374e-05j]]

W\_2=

[[-0.9999205389342619-0.00014562199505482702j, -0.01248836639462127+0.0017132765405827846j],

[0.012488366394616842+0.0017132765405830687j, -0.9999205389342601+0.00014562199505146957j]]

np.float64(0.00010710353876261764)

vwv'w'

[[0.9999999513644342+0.00028122991424658976j, 1.3397410335529483e-05+0.00013416920229983808j],

[-1.339741033557451e-05+0.00013416920229983136j, 0.9999999513644339-0.0002812299142465889j]]

H\_3=

[[2.862354363812993e-06+0.7071044486061809j, -8.36945570651514e-06+0.7071091137041009j],

[8.369455720729844e-06+0.7071091137041439j, 2.8623543800553714e-06-0.7071044486061483j]]

np.float64(6.66423511060911e-06)

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

T\_0=ADDDCDDADDADADCDCDADDADDDDDCCD 0.010633647522403268

[[0.9214328637393816-0.38829473549440324j, 0.013538255388503118-0.0023219925522892093j],

[-0.01353825538850309-0.00232199255228982j, 0.9214328637393814+0.3882947354944053j]]

Delta=T\*T\_0’=

v

[[0.9962333440154221+0.04741039339418712j, 0.04903770075459578+0.05354141177407529j],

[-0.0490377007545958+0.05354141177407529j, 0.9962333440154221-0.04741039339418712j]]

V\_0=CDDCBCBCCBCCBCBCBBBBCCDDDADDDC 0.004291679092857355

[[0.9957946738310715+0.04699159467758529j, 0.05311038193662783+0.058000387325189515j],

[-0.05311038193662737+0.05800038732518889j, 0.9957946738310716-0.04699159467758557j]]

w

[[0.9962333440154221-0.06797292131172666j, 0.00750593128277318+0.05331479377975734j],

[-0.0075059312827731525+0.05331479377975734j, 0.9962333440154222+0.06797292131172661j]]

W\_0=CBCBCDDADDADDAADDDDDCDDDCCDDDD 0.006568295244978606

[[0.9963012593400389-0.07185046655961874j, 0.011274872044269055+0.04576230275026283j],

[-0.011274872044268552+0.04576230275026277j, 0.9963012593400393+0.0718504665596208j]]

vwv'w'

[[0.9998869255403695+0.006120467715333845j, -0.011619128979419987+0.007326107433953594j],

[0.011619128979420001+0.007326107433953566j, 0.9998869255403697-0.006120467715333852j]]

T\_1=

[[0.9235932348595096-0.3833712711407892j, -0.000848485351437959+0.0011336041016222504j],

[0.0008484853514394174+0.001133604101619506j, 0.9235932348595104+0.3833712711407917j]]

np.float64(0.0011313872385977609)

Delta=t\*t\_1’=

v

[[0.9995999141712456-0.024070184496607444j, 0.009211130696895185-0.011653020141660447j],

[-0.00921113069689521-0.011653020141660447j, 0.9995999141712456+0.024070184496607444j]]

V\_0=BCCBCDDDCBBCDCDADDCBCCBCCBADCC 0.018610738956494885

[[0.999633431282071-0.02389528898331017j, -0.0007544611147454489+0.012706258932623924j],

[0.000754461114745638+0.012706258932623341j, 0.9996334312820709+0.02389528898331017j]]

Delta=v\*v\_0’=

a

[[0.9933983190447686-0.1090067485933771j, 0.03572833395309326+0.0008914219341029372j],

[-0.035728333953093244+0.000891421934102965j, 0.9933983190447686+0.10900674859337711j]]

A\_0=CCBBCCCCBCBBBAADCDCDAAADADDDCB 0.013364108414115675

[[0.9953415699772866-0.09166395288197905j, 0.02951799823070312+0.004643985104578419j],

[-0.029517998230702322+0.004643985104579418j, 0.9953415699772867+0.09166395288197908j]]

b

[[0.9933983190447687+0.0324040165052111j, 0.09759580759172522+0.050841103192958245j],

[-0.09759580759172526+0.050841103192958315j, 0.9933983190447686-0.032404016505211075j]]

B\_0=DADDDDDDADADCDCBCBBBCCCDDADDDC 0.00712307213523018

[[-0.9943818806145382-0.034150659712346876j, -0.08913035169739203-0.04576230275026227j],

[0.08913035169739253-0.04576230275026204j, -0.994381880614539+0.034150659712345766j]]

aba'b'

[[0.9996536403954933-0.00028387956425322824j, 0.009377619169493706-0.024588186495605655j],

[-0.009377619169493784-0.024588186495605454j, 0.9996536403954932+0.0002838795642532213j]]

V\_1=

[[0.9996533093937026-0.024555846335204128j, 0.0073685949436938245-0.005997936106424842j],

[-0.007368594943692783-0.005997936106423719j, 0.999653309393704+0.02455584633520419j]]

np.float64(0.004219812313174727)

w

[[0.9995999141712456+0.004956896742183914j, 0.025898525516688094+0.01023265066279197j],

[-0.02589852551668801+0.010232650662791928j, 0.9995999141712456-0.004956896742183914j]]

W\_0=DABCDDABBCDABBCBBBCCDADDDCCCDD 0.01950117367395354

[[-0.9996334312820712-0.02528979925473465j, -0.009587845705318409-0.0012256963811123622j],

[0.009587845705318898-0.0012256963811125288j, -0.9996334312820714+0.025289799254734596j]]

Delta=w\*w\_0=

a

[[0.9930813601382561+0.03526042373989455j, 0.0009643809373806268+0.11200528841551113j],

[-0.0009643809373806181+0.11200528841551113j, 0.9930813601382562-0.03526042373989455j]]

A\_0=DDADADDDDDDDCBCDDDDAADAADDDDCD 0.015524850631218418

[[0.994015311896611+0.018418976050937327j, 0.014004538000606831+0.10676223092326559j],

[-0.014004538000605565+0.10676223092326492j, 0.9940153118966104-0.01841897605093505j]]

b

[[0.9930813601382562+0.07554275049350893j, 0.0864937139147981-0.024526362287376646j],

[-0.08649371391479813-0.024526362287376757j, 0.9930813601382561-0.07554275049350896j]]

B\_0=DDCCBAADCCCBCCCCBBCDDDDDDDCCDA 0.017005838178076802

[[0.9940153118966093+0.06255867872930715j, 0.07849986637468605-0.043101536050210304j],

[-0.07849986637468465-0.04310153605021035j, 0.9940153118966093-0.06255867872930632j]]

aba'b'

[[0.9996197042253381-0.02025823611884106j, 0.016052316152569655+0.009611136245971593j],

[-0.01605231615256968+0.009611136245971375j, 0.9996197042253382+0.02025823611884109j]]

W\_1=

[[-0.9996960747964856-0.0066305092689874535j, -0.023277398017153998-0.004685843029451681j],

[0.02327739801714898-0.004685843029450363j, -0.9996960747964839+0.00663050926898737j]]

np.float64(0.004497088504575221)

vwv'w'

[[0.9999987199629145+0.0007450415333619155j, 0.000350086740699555-0.0013720149117838233j],

[-0.0003500867406994306-0.0013720149117839031j, 0.9999987199629146-0.000745041533361919j]]

T\_2=

[[0.9237129278220932-0.38308532175627946j, -0.0002502463316841139+2.4617727769598056e-05j],

[0.0002502463316966825+2.461772776205266e-05j, 0.9237129278220931+0.38308532175628157j]]

np.float64(0.0003553177652853421)

Delta=t\*t\_2’=

v

[[0.9998743683074633-0.0033413934470566953j, 0.01221675532036029+0.009530665298163321j],

[-0.012216755320360288+0.009530665298163321j, 0.9998743683074635+0.0033413934470566953j]]

V\_0=DDDDDDDDDDDDDDDDDDDDDDDDDDDDDD 0.01120855443547924

[[-1.000000000000003-1.1796119636642288e-15j, -1.6688179249492328e-15-2.1649348980190553e-15j],

[-1.7275460475023567e-15-1.7763568394002505e-15j, -1.000000000000004-2.192690473634684e-15j]]

DELTA=V\*V\_0’=

A

[[0.9960292943238969+0.058547631143919115j, -0.022915188372459237+0.06302946832974432j],

[0.022915188372459216+0.06302946832974432j, 0.9960292943238969-0.058547631143919115j]]

A\_0=DCDADADADADDDAADDDDCDDAADADDCC 0.004711832048762669

[[0.9961612425490021+0.05821054830534589j, -0.01626792134484094+0.0633219207252911j],

[0.016267921344840813+0.06332192072529148j, 0.9961612425490023-0.05821054830534417j]]

B

[[0.9960292943238969+0.0644967263010624j, 0.04217408204423483-0.044577617128015334j],

[-0.0421740820442348-0.044577617128015334j, 0.9960292943238969-0.06449672630106237j]]

B\_0= BAADDDCDDADAADADDADDCCCDDDDDDD 0.013149356090484055

[[-0.995341569977289-0.07394223196675616j, -0.029517998230702284+0.05437272466389531j],

[0.02951799823070193+0.054372724663895367j, -0.995341569977289+0.07394223196675426j]]

ABA'B'

[[0.9998743683074662-0.003341393447016061j, 0.01221675532020904+0.00953066529804214j],

[-0.012216755320209017+0.00953066529804214j, 0.9998743683074661+0.0033413934470160403j]]

V\_1=

[[-0.9998578368803128+0.0020136699030295024j, -0.014769116896893279-0.007881900065849944j],

[0.014769116896889332-0.007881900065850173j, -0.9998578368803136-0.002013669903032911j]]

np.float64(0.002344792046911141)

DELTA=V\*V\_1’=

A

[[0.9991706469082695+0.020102557795052822j, 0.00998555020768848+0.03397343541734338j],

[-0.009985550207688473+0.03397343541734338j, 0.9991706469082695-0.02010255779505285j]]

A\_0=CCDDDCDDDDADDDCDDDAADDDDCDDDDC 0.010964895059108491

[[-0.9984471899924312-0.02980252928838545j, -0.01673420395694312-0.04398845828356137j],

[0.016734203956943434-0.04398845828356142j, -0.9984471899924313+0.029802529288383117j]]

DELTA=A\*A\_0’=

X

[[0.9961157805941563-0.059469111424368004j, -0.02332978999071744+0.06060113313032689j],

[0.023329789990717394+0.06060113313032689j, 0.9961157805941563+0.059469111424368004j]]

X\_0=DDCDDDADADDDDCCBBCCBCCBBCCDDDC 0.005076056767872407

[[-0.9963012593400378+0.06282500649231842j, 0.020506509530668703-0.054920872749484775j],

[-0.020506509530668633-0.05492087274948383j, -0.9963012593400375-0.0628250064923192j]]

Y

[[0.9961157805941562-0.037685821969053776j, 0.07931947685110526-0.006446011625667297j],

[-0.0793194768511053-0.006446011625667325j, 0.9961157805941563+0.03768582196905377j]]

Y\_0=DDDDCDDDADCCCDDAADDDDDCDDDADDA 0.011429458037601373

[[0.9953415699772894-0.033453404576632206j, 0.08837589058264775-0.01912408850390336j],

[-0.08837589058264703-0.019124088503902313j, 0.9953415699772888+0.03345340457663476j]]

XYX'Y'

[[0.9998797710763421-0.009577200687721214j, -0.006878494626790719-0.010070100842432674j],

[0.006878494626790559-0.010070100842432747j, 0.9998797710763423+0.009577200687721214j]]

A\_1=

[[-0.9992126526778299-0.02018579689169739j, -0.009281874101141925-0.03287027754017466j],

[0.009281874101141112-0.03287027754017548j, -0.9992126526778288+0.02018579689169497j]]

np.float64(0.0009275803420806134)

B

[[0.9991706469082694-0.030584381076413064j, 0.02458524218091946+0.010871055973933674j],

[-0.02458524218091946+0.01087105597393373j, 0.9991706469082695+0.030584381076413078j]]

B\_0= DDDCBADAABADDDABCDDCCBBADCCCBC 0.017737797756291494

[[0.9984471899924299-0.0511751254918576j, 0.012317511661656413+0.018237166270553575j],

[-0.01231751166165583+0.018237166270553242j, 0.9984471899924288+0.05117512549185782j]]

DELTA=B\*B\_0’=

X

[[0.9937089528243264-0.01927212206118728j, 0.09513629372426449+0.055858643059508356j],

[-0.09513629372426449+0.055858643059508356j, 0.9937089528243264+0.019272122061187225j]]

X\_0=DDDCCDDAAADDADDCCDDDDDDAADDDDD 0.015309445286740235

[[-0.9943818806145389+0.0032199479155484295j, -0.08367101978471786-0.06475699104423055j],

[0.08367101978471772-0.0647569910442306j, -0.9943818806145395-0.0032199479155504j]]

Y

[[0.9937089528243264+0.04809124920623481j, -0.043788851124848725+0.09117173544322846j],

[0.043788851124848704+0.09117173544322849j, 0.9937089528243264-0.04809124920623481j]]

Y\_0=CDDDAADDCDDDADADDDCDDDDDDDADCC 0.01658771577541408

[[0.9943818806145388+0.04231426503424651j, -0.060544918690894824+0.07581880572008778j],

[0.060544918690894116+0.07581880572008837j, 0.9943818806145404-0.04231426503424446j]]

XYX'Y'

[[0.9996853705307568+0.020281333109168402j, 0.012238325086256805-0.00824929531417333j],

[-0.01223832508625685-0.008249295314173247j, 0.9996853705307567-0.020281333109168402j]]

B\_1=

[[0.9991990102246197-0.031626188084236916j, 0.02133228836254604+0.01208534925567786j],

[-0.021332288362545894+0.01208534925567841j, 0.9991990102246227+0.031626188084237276j]]

np.float64(0.0025634335393582867)

ABA'B'

[[0.9999945019502557-0.001283033235449836j, -0.002559387792615615+0.0016731494561436251j],

[0.0025593877926156305+0.0016731494561437344j, 0.999994501950256+0.0012830332354498326j]]

V\_2=

[[-0.999877230934912+0.0030729398341443415j, -0.012174957319618714-0.009372860451942097j],

[0.012174957319612668-0.009372860451945013j, -0.9998772309349165-0.0030729398341478344j]]

np.float64(0.0002221766154708862)

w

[[0.9998743683074636+0.006869183483043051j, -0.007571329079849227+0.012113500567223184j],

[0.007571329079849218+0.012113500567223268j, 0.9998743683074633-0.00686918348304294j]]

W\_0=DDDDDDDDDDDDDDDDDDDDDDDDDDDDDD 0.011208554435474288

[[-1.000000000000003-1.1796119636642288e-15j, -1.6688179249492328e-15-2.1649348980190553e-15j],

[-1.7275460475023567e-15-1.7763568394002505e-15j, -1.000000000000004-2.192690473634684e-15j]]

DELTA=W\*W\_0’=

A

[[0.9960292943239004+0.06921570437645846j, 0.05567977469494506+0.005881649957605262j],

[-0.05567977469494509+0.005881649957605262j, 0.9960292943239003-0.06921570437645852j]]

A\_0=CDADDDADDDADDDDDADDDCCDDDAADDD 0.009703693428303737

[[0.9949750012593601+0.07593226922057017j, 0.06524978948882414-0.001225696381111696j],

[-0.0652497894888237-0.0012256963811119737j, 0.9949750012593608-0.07593226922056812j]]

B

[[0.9960292943239004-0.04825935079558141j, 0.054587632319584904+0.051155354628462435j],

[-0.05458763231958493+0.05115535462846249j, 0.9960292943239004+0.04825935079558136j]]

B\_0=DDCDDDDCCCCDDDADDADDDCDCDDDCCD 0.014978208540790051

[[0.9949750012593601-0.04048882739012068j, 0.07408317407939774+0.05382457657830725j],

[-0.07408317407939782+0.05382457657830669j, 0.994975001259361+0.04048882739012284j]]

ABA'B'

[[0.9998743683074665+0.006869183482951201j, -0.007571329079747553+0.012113500567061411j],

[0.007571329079747437+0.012113500567061515j, 0.9998743683074662-0.006869183482951201j]]

W\_1=

[[-0.9998047449907519-0.009836051867512366j, 0.008186151630640345-0.015056921967537372j],

[-0.008186151630644933-0.015056921967535723j, -0.9998047449907556+0.009836051867508935j]]

np.float64(0.00298738110243915)

DELTA=W\*W\_1=

A

[[0.9989432429143643-0.03375472866484375j, 0.002341978775424824+0.031105158156031508j],

[-0.002341978775424824+0.031105158156031494j, 0.9989432429143643+0.03375472866484375j]]

A\_0=DAADCCCDDADDADCCCDDDCCDDDDDDDD 0.00975521926454517

[[0.9984471899924312-0.03345340457663276j, -0.0007544611147450187+0.04453660636915041j],

[0.0007544611147456033+0.04453660636914997j, 0.9984471899924308+0.033453404576634746j]]

Delta=a\*a\_0’=

x

[[0.9965450407814423-0.08225648641768707j, 0.011246350189610472-0.0023177022118897744j],

[-0.011246350189610486-0.0023177022118897744j, 0.9965450407814425+0.08225648641768707j]]

X\_0=CDDADADADAADDCDDDADDAAADDDADCC 0.011083662456398705

[[0.9957946738310735-0.09080209813657852j, 0.00685817974898156+0.010045492232571817j],

[-0.0068581797489816205+0.010045492232572303j, 0.9957946738310735+0.09080209813658041j]]

y

[[0.9965450407814425+0.010232451598933184j, 0.07939863008976267+0.022116423039407217j],

[-0.07939863008976258+0.022116423039407203j, 0.9965450407814425-0.010232451598933184j]]

Y\_0=CDDADDDDADAADDADDDDCBBADDDCCDA 0.008761550726539188

[[-0.9971209319117517-0.0006972551357126155j, -0.07181979073516359-0.02431622169407j],

[0.07181979073516379-0.024316221694069728j, -0.9971209319117517+0.0006972551357109502j]]

xyx'y'

[[0.9999048356971011-0.00041203294920045055j, 0.0026292583365019034-0.013536498033185124j],

[-0.00262925833650175-0.01353649803318515j, 0.9999048356971013+0.00041203294920045055j]]

A\_1=

[[0.9988686784814829-0.03559001043059914j, 0.002970606647591655+0.03139888218337129j],

[-0.0029706066475914446+0.031398882183371515j, 0.9988686784814828+0.03559001043060112j]]

np.float64(0.0013883922007401077)

B

[[0.9989432429143642+0.007462578100120666j, 0.045106516738140146+0.004702075242377507j],

[-0.0451065167381402+0.004702075242377493j, 0.9989432429143642-0.00746257810012068j]]

B\_0=CCBADDDCCDDADADDAADDDCDDDDDCCD 0.007541776671886351

[[0.9984471899924305+0.004779057796663183j, 0.05537376528086254+0.0037570628712282894j],

[-0.05537376528086242+0.0037570628712282894j, 0.9984471899924304-0.004779057796661157j]]

Delta=b\*b\_0’=

x

[[0.9973300148762796+0.012129358311472604j, 0.0029571152681948367+0.0719512026523717j],

[-0.00295711526819484+0.0719512026523717j, 0.9973300148762796-0.012129358311472604j]]

X\_0=DAADDDDDCDDADDDDADDDDDCCDDDADC 0.005044496007517921

[[0.9974875006296816+0.005476312932375105j, 0.0007544611147449962+0.07062667252992105j],

[-0.0007544611147448851+0.0706266725299208j, 0.997487500629681-0.005476312932373051j]]

y

[[0.9973300148762795-0.07083279457100841j, -0.012660046785164563+0.012461133798291113j],

[0.01266004678516456+0.012461133798291057j, 0.9973300148762795+0.07083279457100841j]]

Y\_0=DCDDDDDCDDDADAAADAAADADADDADDC 0.004663436897932446

[[0.9971209319117524-0.07211679432262957j, -0.01400453800060654+0.018785314356141114j],

[0.014004538000606557+0.018785314356140715j, 0.9971209319117516+0.07211679432263163j]]

xyx'y'

[[0.9999431216046315+0.0027678862321701136j, -0.010273207888605475+0.0007440168468482809j],

[0.010273207888605466+0.0007440168468481681j, 0.9999431216046316-0.0027678862321701275j]]

B\_1=

[[0.9989368720503539+0.007619924852729448j, 0.04522765450965047+0.004639145510670737j],

[-0.04522765450964943+0.004639145510669709j, 0.9989368720503508-0.00761992485272742j]]

np.float64(0.0001473653329076259)

ABA'B'

[[0.9999910755541472-0.0029521359467474017j, 0.0005995521901163517-0.002962134801707766j],

[-0.0005995521901164662-0.0029621348017078216j, 0.9999910755541472+0.0029521359467474025j]]

W\_2=

[[-0.9998769500626727-0.006827328739430185j, 0.007557582310464153-0.011931272579177803j],

[-0.007557582310471071-0.011931272579174992j, -0.99987695006267+0.00682732873942667j]]

np.float64(0.0001325790595200567)

vwv'w'

[[0.9999998737492859+0.00043505420725398637j, 0.00022177665213729038-0.00011850893181980689j],

[-0.00022177665213730157-0.00011850893181963688j, 0.9999998737492856-0.00043505420725398637j]]

T\_3=

[[0.9238765454551426-0.3826906435152535j, -9.072769366281936e-06-6.465440975196571e-06j],

[9.072769402972619e-06-6.46544099266998e-06j, 0.9238765454551456+0.3826906435152569j]]

np.float64(9.609163736389717e-06)