## test schema

## October 15, 2022

```
[1]: import sys
    import os
    lib_path = os.path.realpath(os.path.join(os.getcwd(), ".."))
    if lib_path not in sys.path:
        sys.path = [lib_path] + sys.path
[2]: from src.main import *
    %matplotlib inline
[3]: Delta = 12.0
[4]: class DummyProp:
        def __init__(self, Delta):
            self.rho cp1 = 0.1
            self.rho_cp2 = 1.0
            self.Delta = Delta
[5]: x = np.linspace(0.5, Delta - 0.5, int(Delta))
    phy_prop = DummyProp(Delta)
    bulle = Bulles(np.array([[3.75, 7.25]]), Delta=Delta)
    print("I : ", bulle.indicatrice_liquide(x))
    I: [1.
              1. 1. 0.75 0. 0. 0.
                                           0.75 1.
                                                     1. 1. 1. ]
[6]: j = 5
    n = int(2 * Delta * j + 1)
    np.seterr(all="ignore")
    for _ in range(n):
        bulle.shift(1.0 / j)
        print()
        print("=======")
        print("markers : ", bulle.markers)
        T = get_T_creneau(x, phy_prop=phy_prop, markers=bulle)
        print("T : ", T)
        print("=======")
        print("| Interpolations |")
```

```
for scheme in ["upwind", "center", "center_h", "quick", "weno"]:
      print(scheme + " : ", interpolate(T, schema=scheme))
=============
markers : [[3.95 7.45]]
                     0. 0.34482759 1.
                                               1.
                        0.
                                           0.
         0.89108911 0.
                                   0.
============
| Interpolations |
============
                 0. 0.
                                 0.
                                          0.34482759 1.
upwind: [0.
                                  0.
1.
        1.
                 0.89108911 0.
                                            0.
        1
center: [0.
                0.
                     0.
                                 0.17241379 0.67241379 1.
1.
        0.94554455 0.44554455 0.
                                  0.
0.
center_h : [0. 0.
                                            0.51282051 1.
                          0.
                                   0.
        0.94240838 0.
                                  0.
1.
                         0.
                                           0.
0.
       ]
                 0. 0. 1331755 0.34482759 1.
quick : [ 0.
         1.
                  0.70973936 -0.11138614 0.
 1.
 0.
weno : [ 0.00000000e+00 0.0000000e+00 -9.79902817e-13 4.58286068e-11
 6.26244898e-01 1.00000000e+00 1.00000000e+00 9.9999999e-01
 7.97500195e-01 -3.09237345e-13 2.94438458e-14 0.00000000e+00
 0.0000000e+001
===========
markers : [[4.15 7.65]]
T : [0.
                     0.
             0.
                           0.
                                      0.98265896 1.
         0.94890511 0.
                           0.
                                   0.
                                                    1
                                            0.
==============
| Interpolations |
_____
upwind: [0.
               0.
                                   0.
                                           0.
                                                   0.98265896
                         0.
                 0.94890511 0.
1.
        1.
                                  0.
                                           0.
0.
center : [0.
                                           0.49132948 0.99132948
                0.
                                   0.
        0.97445255 0.47445255 0.
1.
                                   0.
                                            0.
0.
        1
                           0.
                                   0.
                                             0. 0.99125364
center h : [0.
                 0.
        0.97378277 0.
                           0.
                                   0.
                                            0.
0.
        1
quick : [ 0.
            0.
                     0.
                              0.
                                              0.03702638
0.98265896
```

print("=======")

```
1. 0.84881901 -0.11861314 0. 0.
 0.
weno: [0.00000000e+00 0.0000000e+00 0.00000000e+00 -4.23433644e-14
 1.38197729e-12 9.94219880e-01 1.00292740e+00 9.93386695e-01
 9.06209525e-01 -2.51716786e-13 2.43831429e-14 0.00000000e+00
 0.0000000e+00]
markers : [[4.35 7.85]]
        0.
Τ : [O.
                   0.
                        0. 0.94890511 1.
                    0. 0.
        0.98265896 0.
                                        0.
                                                1
===============
| Interpolations |
0. 0.
                                       0. 0.94890511
upwind: [0.
                              0.
               0.98265896 0.
1. 1.
                               0.
                                       0.
0.
       ]
                              0.
center: [0. 0. 0.
                                       0.47445255 0.97445255
       0.99132948 0.49132948 0.
                               0.
                                        0.
      ]
0.
center_h : [0. 0.
                                             0.97378277
                        0.
                                0.
                                        0.
       0.99125364 0.
                       0.
                                Ο.
                                       0.
      1
            0. 0. 0.
quick : [ 0.
                                         0.09832136
0.94890511
 1.
        1. 0.94541478 -0.12283237 0.
        1
 0.
weno : [ 0.00000000e+00 0.0000000e+00 0.00000000e+00 -4.70246327e-14
 1.55094076e-12 9.82987433e-01 1.00303620e+00 9.94194728e-01
 9.68206702e-01 -2.24802505e-13 2.19558186e-14 0.00000000e+00
 0.0000000e+001
===========
markers : [[4.55 8.05]]
T : [0.
        0.
                   0. 0.
                                0.89108911 1.
                0.34482759 0. 0.
1.
                                        0.
                                                1
        1.
| Interpolations |
==============
                      0.
upwind: [0.
                0.
                                       0.
                                                0.89108911
                               0.
1.
                       0.34482759 0.
       1.
               1.
                                       0.
0.
       1
                                     0.44554455 0.94554455
center : [0.
                0. 0. 0.
1.
                0.67241379 0.17241379 0.
                                       0.
       1.
       ]
center_h : [0.
                0. 0.
                                0.
                                        0.
                                                0.94240838
                0.51282051 0. 0.
1.
        1.
                                        0.
0.
       1
```

```
quick: [0. 0. 0. 0. 0.17425065
0.89108911
             1. 0.1273076 -0.04310345 0.
 1.
        1.
 0.
        ٦
1.91465558e-12 9.64165518e-01 1.00000000e+00 1.00000000e+00
 1.00000000e+00 1.16727283e-01 -5.74058317e-12 5.08097757e-13
 0.0000000e+001
markers : [[4.75 8.25]]
                0. 0.
T : [0. 0.
                              0.76923077 1.
               0.76923077 0.
                             0.
1.
                                     0.
                                             ]
       1.
===============
| Interpolations |
upwind: [0.
             0.
                     0.
                             0.
                                     0. 0.76923077
              1. 0.76923077 0.
                                    0.
1.
       1.
0.
       1
center : [0.
                                    0.38461538 0.88461538
             0.
                  0.
                             0.
1.
              0.88461538 0.38461538 0.
       1.
                                    0.
0.
center_h : [0.
               0.
                      0.
                              0.
                                      0. 0.86956522
               0.86956522 0.
                             0.
       1.
                                      Ο.
0.
       1
             0. 0. 0. 0.24342635
quick : [ 0.
0.76923077
 1.
        1.
              1. 0.50146178 -0.09615385 0.
 0.
weno: [0.00000000e+00 0.00000000e+00 0.00000000e+00 -8.82720977e-14
 3.20551431e-12 9.32630974e-01 1.00000000e+00 1.00000000e+00
 1.00000000e+00 5.34457796e-01 -5.08907643e-13 4.57707173e-14
 0.0000000e+00]
_____
markers : [[4.95 8.45]]
                   0. 0.
                              0.34482759 1.
T : [0. 0.
               0.89108911 0.
                             0.
        1.
                                      0.
| Interpolations |
_____
                     0. 0.
upwind: [0.
                                     0. 0.34482759
              0.
              1. 0.89108911 0.
1.
       1.
                                     0.
0.
       1
                         0.
center : [0.
             0. 0.
                                    0.17241379 0.67241379
       1.
             0.94554455 0.44554455 0.
                                    0.
0.
       ]
center_h : [0.
               0. 0. 0. 0. 0.51282051
```

```
0.94240838 0. 0. 0.
          1.
0.
         1
quick : [ 0.
                   0. 0.
                                        0.
                                                    0.1331755
0.34482759
                                 0.70973936 -0.11138614 0.
 1.
                       1.
            1.
          1
 0.
weno: [0.00000000e+00 0.0000000e+00 0.0000000e+00 -9.79902817e-13
 4.58286068e-11 6.26244898e-01 1.00000000e+00 1.00000000e+00
 9.9999999e-01 7.97500195e-01 -3.09237345e-13 2.94438458e-14
 0.00000000e+001
=============
markers : [[5.15 8.65]]
T : [0.
              0.
                        0.
                                  0.
                                                      0.98265896
                                            0.
1.
                    0.94890511 0.
                                        0.
                                                 0.
                                                          ]
===========
| Interpolations |
_____
upwind: [0.
                   0.
                            0.
                                       0.
                                                 0.
                                                          0.
0.98265896 1.
                            0.94890511 0.
                   1.
                                                 0.
0.
                   0.
center : [0.
                             0.
                                       0.
                                                0.
                                                          0.49132948
0.99132948 1.
                    0.97445255 0.47445255 0.
                                                 0.
        ]
center_h : [0.
                     0.
                               0.
                                        0.
                                                  0.
                                                            0.
0.99125364 1.
                    0.97378277 0.
                                        0.
                                                 0.
0.
        1
quick : [ 0.
                    0.
                             0.
                                       0.
                                                    0.
0.03702638
 0.98265896 1.
                     1.
                                 0.84881901 -0.11861314 0.
weno : [ 0.00000000e+00 0.0000000e+00 0.00000000e+00 0.00000000e+00
-4.23433644e-14 1.38197729e-12 9.94219880e-01 1.00292740e+00
 9.93386695e-01 9.06209525e-01 -2.51716786e-13 2.43831429e-14
 0.0000000e+00]
_____
markers : [[5.35 8.85]]
T : [0.
              0.
                        0.
                                  0.
                                            0.
                                                      0.94890511
                    0.98265896 0.
                                        0.
                                                 0.
                                                          1
          1.
| Interpolations |
_____
                            0.
upwind: [0.
                                                0.
                                                          0.
                   0.
                                       0.
0.94890511 1.
                   1.
                            0.98265896 0.
                                                 0.
0.
center: [0.
                   0.
                             0.
                                       0.
                                                0.
                                                          0.47445255
0.97445255 1.
                   0.99132948 0.49132948 0.
                                                 0.
```

```
0. ]
                0. 0.
center_h : [0.
                                 0.
                                         0.
                                                0.
0.97378277 1.
                0.99125364 0.
                                0.
                                        0.
0.
      ]
              0. 0. 0.
quick : [ 0.
                                           0.
0.09832136
 0.94890511 1.
              1. 0.94541478 -0.12283237 0.
 0.
-4.70246327e-14 1.55094076e-12 9.82987433e-01 1.00303620e+00
 9.94194728e-01 9.68206702e-01 -2.24802505e-13 2.19558186e-14
 0.0000000e+00]
==============
markers : [[5.55 9.05]]
T: [0. 0. 0. 0. 0. 0. 0.89108911
1. 1. 1. 0.34482759 0. 0. ]
============
| Interpolations |
=============
                               0. 0.
upwind: [0.
                       0.
                0.
                                                0.
                       1. 0.34482759 0.
0.89108911 1.
                1.
     7
center: [0.
                0.
                       0. 0. 0.
                                                0.44554455
0.94554455 1.
                1.
                       0.67241379 0.17241379 0.
0. ]
                                      0.
center_h : [0.
                0.
                        0. 0.
                                                 0.
0.94240838 1.
                        0.51282051 0.
                1.
                                        0.
0. 1
                      0. 0. 0.
quick : [ 0.
                0.
0.17425065
 0.89108911 1. 1. 0.1273076 -0.04310345
 0.
weno : [5.08097757e-13 0.00000000e+00 0.0000000e+00 0.00000000e+00
-5.67845598e-14 1.91465558e-12 9.64165518e-01 1.00000000e+00
 1.00000000e+00 1.00000000e+00 1.16727283e-01 -5.74058317e-12
 5.08097757e-13]
============
markers : [[5.75 9.25]]

      0.
      0.
      0.
      0.76923077

      1.
      0.76923077 0.
      0.
      ]

T : [0. 0.
1.
        1.
| Interpolations |
_____
                     0.
1.
upwind: [0.
                               0. 0.
               0.
                                                 0.
               1.
0.76923077 1.
                               0.76923077 0.
0.
```

```
0.
                          0. 0.
center : [0.
                                              0.
                                                       0.38461538
0.88461538 1.
                  1.
                            0.88461538 0.38461538 0.
0.
        1
center h : [0.
                  0.
                            0.
                                     0.
                                               0.
                                                         0.
0.86956522 1.
                                              0.
                   1.
                            0.86956522 0.
0.
         1
                           0. 0.
quick : [ 0.
                   0.
                                                 0.
0.24342635
 0.76923077 1.
                    1.
                              1.
                                        0.50146178 -0.09615385
         ٦
 0.
weno : [ 4.57707173e-14  0.00000000e+00  0.00000000e+00  0.00000000e+00
-8.82720977e-14 3.20551431e-12 9.32630974e-01 1.00000000e+00
 1.00000000e+00 1.00000000e+00 5.34457796e-01 -5.08907643e-13
 4.57707173e-14]
_____
markers : [[5.95 9.45]]
              0.
                            0. 0.
T : [0.
                       0.
                                                   0.34482759
1.
                   1.
                       0.89108911 0.
                                             0.
                                                       ]
         1.
| Interpolations |
_____
                                   0.
upwind: [0.
                  0.
                          0.
0.34482759 1.
                  1.
                            1.
                                    0.89108911 0.
0.
         7
                                              0.
center: [0.
                  0.
                                                       0.17241379
                           0.
                                    0.
0.67241379 1.
                            0.94554455 0.44554455 0.
                  1.
0.
       ]
center h : [0.
                  0.
                            0.
                                     0.
                                               0.
                                                         0.
0.51282051 1.
                   1.
                            0.94240838 0.
                                             0.
0.
        1
quick : [ 0.
                   0.
                             0.
                                       0.
                                                 0.
                                                           0.1331755
 0.34482759 1.
                                         0.70973936 -0.11138614
                  1.
                             1.
         1
weno : [ 2.94438458e-14  0.00000000e+00  0.00000000e+00  0.00000000e+00
-9.79902817e-13 4.58286068e-11 6.26244898e-01 1.00000000e+00
 1.00000000e+00 9.9999999e-01 7.97500195e-01 -3.09237345e-13
 2.94438458e-14]
markers : [[6.15 9.65]]
T : [0.
              0.
                       0.
                                0.
                                         0.
                                                   0.
0.98265896 1.
                   1.
                          0.94890511 0.
                                              0.
                                                       ]
==============
| Interpolations |
_____
upwind: [0.
                                   0.
                  0.
                           0.
                                              0.
                                                       0.
0. 0.98265896 1.
                           1.
                                    0.94890511 0.
```

```
0. ]
center: [0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.49132948 0.99132948 1. 0.97445255 0.47445255 0.
                                                 0.
0. ]
center h : [0. 0.
                        0. 0. 0.
                                                  0.
0. 0.99125364 1.
                                         0.
                        0.97378277 0.
0.
       1
quick : [ 0. 0.
                         0. 0. 0. 0. 0.
1. 0.84881901 -0.11861314
 0.03702638 0.98265896 1.
 0.
weno : [ 2.43831429e-14  0.00000000e+00  0.00000000e+00  0.00000000e+00
 0.00000000e+00 -4.23433644e-14 1.38197729e-12 9.94219880e-01
 1.00292740e+00 9.93386695e-01 9.06209525e-01 -2.51716786e-13
 2.43831429e-14]
_____
markers : [[6.35 9.85]]
                0. 0.
1. 0.98265896 0.
                         0. 0.
T : [0. 0.
                                             0.
0.94890511 1.
                                         0.
                                                  ]
============
| Interpolations |
============
                               0.
upwind: [0.
                       0.
       0.94890511 1.
                        1.
                                0.98265896 0.
0.
0.
       1
center: [0.
                0.
                       0. 0.
                                                  0.
0.47445255 0.97445255 1.
                        0.99132948 0.49132948 0.
0.
center_h : [0. 0.
                       0. 0. 0. 0.
0.99125364 0. 0.
                                          0.
                                                   0.
0. 0.97378277 1.
       1
0.
                                  0.
                         0.
quick : [ 0.
            0.
                                             0.
 0.09832136 0.94890511 1. 0.94541478 -0.12283237
        1
weno : [ 2.19558186e-14  0.00000000e+00  0.00000000e+00  0.00000000e+00
 0.00000000e+00 -4.70246327e-14 1.55094076e-12 9.82987433e-01
 1.00303620e+00 9.94194728e-01 9.68206702e-01 -2.24802505e-13
 2.19558186e-14]
markers : [[ 6.55 10.05]]
T : [0. 0.
                 0. 0.
                                      0.
                                             0.
                     1. 0.34482759 0.
0.89108911 1.
                 1.
==============
| Interpolations |
_____
upwind: [0.
                                0. 0.
                        0.
                0.
0. 0.89108911 1.
                        1.
                                 1.
                                        0.34482759
```

```
0.
        ]
center : [0. 0.
                        0. 0. 0.
0.44554455 0.94554455 1.
                         1.
                                  0.67241379 0.17241379
       ]
center_h : [0. 0.
                          0.
                                   0.
                                                  0.
                                             0.
        0.94240838 1.
                                   0.51282051 0.
0.
                           1.
0.
        1
                                    0.
quick: [-0.04310345 0.
                           0.
                                               0.
                                                         0.
 0.17425065 0.89108911 1.
                           1.
                                        1.
                                                 0.1273076
-0.04310345]
weno: [-5.74058317e-12 5.08097757e-13 0.00000000e+00 0.00000000e+00
 0.0000000e+00 -5.67845598e-14 1.91465558e-12 9.64165518e-01
 1.00000000e+00 1.00000000e+00 1.00000000e+00 1.16727283e-01
-5.74058317e-12]
_____
markers : [[ 6.75 10.25]]
                             0.
T : [0. 0.
                      0.
                                     0.
0.76923077 1.
                  1.
                           1.
                                  0.76923077 0.
                                                   ]
===========
| Interpolations |
============
                                          0.
upwind: [0.
                          0.
                                   0.
0.
        0.76923077 1.
                           1.
                                   1.
                                           0.76923077
0.
        1
center : [0.
                 0.
                          0.
                                            0.
                                   0.
0.38461538 0.88461538 1.
                           1.
                                   0.88461538 0.38461538
0.
       ]
center h : [0. 0.
                           0.
                                   0.
                                             0.
                                                     0.
0. 0.86956522 1.
                           1.
                                   0.86956522 0.
        1
0.
quick: [-0.09615385 0.
                           0.
                                     0.
                                               0.
 0.24342635 0.76923077 1. 1.
                                     1.
                                                 0.50146178
-0.09615385]
weno: [-5.08907643e-13 4.57707173e-14 0.00000000e+00 0.00000000e+00
 0.00000000e+00 -8.82720977e-14 3.20551431e-12 9.32630974e-01
 1.00000000e+00 1.00000000e+00 1.00000000e+00 5.34457796e-01
-5.08907643e-13]
markers : [[ 6.95 10.45]]
T : [0.
             0.
                      0.
                            0.
                                        0.
                                                0.
0.34482759 1.
                  1.
                       1. 0.89108911 0.
===========
| Interpolations |
_____
upwind: [0.
                                   0.
                                          0.
                 0.
                          0.
0. 0.34482759 1.
                          1.
                                   1.
                                           0.89108911
```

```
0. ]
center : [0. 0.
                      0. 0. 0.
0.17241379 0.67241379 1.
                       1.
                                 0.94554455 0.44554455
    1
center_h : [0. 0.
                         0.
                                0. 0. 0.
0. 0.51282051 1.
                         1.
                                 0.94240838 0.
0.
       1
quick: [-0.11138614 0.
                         0.1331755 0.34482759 1.
-0.111386147
weno: [-3.09237345e-13 2.94438458e-14 0.00000000e+00 0.00000000e+00
 0.0000000e+00 -9.79902817e-13 4.58286068e-11 6.26244898e-01
 1.00000000e+00 1.00000000e+00 9.9999999e-01 7.97500195e-01
-3.09237345e-13]
_____
markers : [[ 7.15 10.65]]
                         0.
       0. 0. 0. 0. 0.
0.98265896 1. 1. 0.94890511 0.
                                 0.
T : [0.
0.
                                              1
==============
| Interpolations |
=============
upwind: [0. 0. 0.
                               0. 0.
       0.
                                 1.
                                         0.94890511
0.
               0.98265896 1.
0.
       1
center : [0. 0.
                     0.
                               0. 0.
      0.49132948 0.99132948 1.
                                 0.97445255 0.47445255
       ]
0.
               0. 0. 0. 0. 0. 0. 0. 0. 0. 99125364 1. 0.97378277 0.
center_h : [0.
                                      0.
                                                 0.
0. 0.
       1
0.
                     0.
                                  0.
quick: [-0.11861314 0.
                                             0.

      lick:
      [-0.11861314 0.
      0.
      0.

      0.
      0.03702638 0.98265896 1.
      1.

                                               0.84881901
-0.118613147
weno: [-2.51716786e-13 2.43831429e-14 0.00000000e+00 0.00000000e+00
 0.00000000e+00 0.00000000e+00 -4.23433644e-14 1.38197729e-12
 9.94219880e-01 1.00292740e+00 9.93386695e-01 9.06209525e-01
-2.51716786e-13]
markers : [[ 7.35 10.85]]
        0.
T : [0.
                     0. 0.
                                      0.
                                             0.
                     1. 0.98265896 0.
         0.94890511 1.
===============
| Interpolations |
_____
upwind : [0. 0. 0.
                             0. 0.
                               1.
0. 0.94890511 1.
                                        0.98265896
```

```
0.
       ]
0.
       1
center_h : [0. 0. 0.
                                0. 0. 0.
0.
       0.
               0.97378277 1.
                                0.99125364 0.
0.
       1

    quick:
    [-0.12283237 0.
    0.
    0.
    0.

    0.
    0.09832136 0.94890511 1.
    1.

                                           0.
-0.12283237]
weno: [-2.24802505e-13 2.19558186e-14 0.00000000e+00 0.00000000e+00
 0.00000000e+00 0.00000000e+00 -4.70246327e-14 1.55094076e-12
 9.82987433e-01 1.00303620e+00 9.94194728e-01 9.68206702e-01
-2.24802505e-13]
_____
markers : [[ 7.55 11.05]]
                        0.
==============
| Interpolations |
_____
upwind: [0.34482759 0. 0.
                               0.
                                        0.
0. 0.89108911 1.
                                 1.
                                         1.
0.344827591
                                        0.
                    0.
                              0.
center: [0.17241379 0.
0. 0.44554455 0.94554455 1.
                                 1.
                                         0.67241379
0.17241379]
center_h : [0.
                0. 0.
                                 0.
                                          0.
                                              0.
0. 0.
               0.94240838 1.
                                 1.
                                         0.51282051
       1
0.
                                  0.
quick: [ 0.1273076 -0.04310345 0.
                                            0.
                                                      0.

      1ick:
      [ 0.1273076 -0.04310345 0. 0.

      0.
      0.17425065 0.89108911 1. 1.

                                            1.
 0.1273076 ]
weno : [ 1.16727283e-01 -5.74058317e-12 5.08097757e-13 0.00000000e+00
 0.00000000e+00 0.00000000e+00 -5.67845598e-14 1.91465558e-12
 9.64165518e-01 1.00000000e+00 1.00000000e+00 1.00000000e+00
 1.16727283e-01]
=============
markers : [[ 7.75 11.25]]
        0.
                     0.
T : [0.
                           0.
                                 0.
                                              0.
                    1. 1.
                                      0.76923077]
        0.76923077 1.
===============
| Interpolations |
_____
upwind: [0.76923077 0. 0. 0. 0. 0.
0. 0.76923077 1.
                               1.
                                         1.
```

```
0.769230771
center: [0.38461538 0. 0.
                                        0. 0.
                              0.
                                 1.
                                          0.88461538
0.
        0.38461538 0.88461538 1.
0.38461538]
center_h : [0. 0. 0.
                                  0.
                                          0. 0.
       0.
                0.86956522 1.
0.
                                  1.
                                          0.86956522
0.
       1
quick: [ 0.50146178 -0.09615385 0. 0.
                                             0.
                                                      0.
     0.24342635 0.76923077 1.
                                   1.
                                                1.
 0.501461787
weno : [ 5.34457796e-01 -5.08907643e-13 4.57707173e-14 0.00000000e+00
 0.0000000e+00 0.0000000e+00 -8.82720977e-14 3.20551431e-12
 9.32630974e-01 1.00000000e+00 1.00000000e+00 1.00000000e+00
 5.34457796e-01]
_____
markers : [[ 7.95 11.45]]
                    0.
                         0.
                                  0.
T : [0.
         0.
                     1.
0.
        0.34482759 1.
                                 1.
                                         0.89108911]
_____
| Interpolations |
============
upwind: [0.89108911 0. 0.
                                0.
                                         0.
0. 0.34482759 1.
                                 1.
                                          1.
0.89108911]
                               0.
center: [0.44554455 0.
                                         0.
                         0.
      0.17241379 0.67241379 1.
                                  1.
                                          0.94554455
0.44554455]
center_h : [0.
                 0. 0.
                                  0.
                                          0.
                                                    0.
0. 0.
                0.51282051 1.
                                  1.
                                          0.94240838
       1
quick: [ 0.70973936 -0.11138614 0.
                                  0.
                                             0.
                                                      0.

      0.
      0.1331755
      0.34482759
      1.
      1.

                                               1.
 0.70973936]
weno : [7.97500195e-01 -3.09237345e-13 2.94438458e-14 0.00000000e+00
 0.00000000e+00 0.00000000e+00 -9.79902817e-13 4.58286068e-11
 6.26244898e-01 1.00000000e+00 1.00000000e+00 9.9999999e-01
 7.97500195e-01]
============
markers : [[ 8.15 11.65]]
        0.
T : [0.
                     0.
                           0.
                                  0.
                                               0.
                0.98265896 1. 1.
                                      0.94890511]
         0.
_____
| Interpolations |
_____
upwind: [0.94890511 0. 0.
                                         0.
                                  0.
                                                  0.
```

1.

0.98265896 1.

0. 0.

0.

```
0.948905117
center: [0.47445255 0. 0. 0. 0. 0.
                                     0.97445255
           0.49132948 0.99132948 1.
0.
       0.
0.47445255]
              0. 0. 0.
center_h : [0.
                                     0. 0.
   0.
               0. 0.99125364 1.
0.
                                     0.97378277
0.
      1
quick: [ 0.84881901 -0.11861314 0. 0.
                                        0.
                                               0.
            0.03702638 0.98265896 1.
    0.
 0.848819017
weno : [ 9.06209525e-01 -2.51716786e-13 2.43831429e-14 0.00000000e+00
 0.0000000e+00 0.0000000e+00 0.0000000e+00 -4.23433644e-14
 1.38197729e-12 9.94219880e-01 1.00292740e+00 9.93386695e-01
 9.06209525e-01]
_____
markers : [[ 8.35 11.85]]
_____
| Interpolations |
0.
                                     1.
0.98265896]
                          0.
center: [0.49132948 0. 0.
                                   0.
     0. 0.47445255 0.97445255 1.
                                     0.99132948
0.49132948]
              0.
              0. 0. 0. 0. 0.
0. 0.97378277 1. 0.99125364
center_h : [0.
                                          0.
0. 0.
                           0.
quick: [ 0.94541478 -0.12283237 0.
                                       0.
                                                0.
 0. 0. 0.09832136 0.94890511 1. 1.
 0.94541478]
weno : [ 9.68206702e-01 -2.24802505e-13 2.19558186e-14 0.00000000e+00
 0.0000000e+00 0.0000000e+00 0.0000000e+00 -4.70246327e-14
 1.55094076e-12 9.82987433e-01 1.00303620e+00 9.94194728e-01
 9.68206702e-01]
markers : [[8.55 0.05]]
               0. 0.
T: [0.34482759 0.
                              0.
                                        0.
               0.89108911 1. 1.
        0.
                                   1.
_____
| Interpolations |
_____
upwind: [1. 0.34482759 0.
                                  0.
                              0.
                                             0.
```

1.

0. 0.89108911 1.

0. 0.

```
٦
center: [0.67241379 0.17241379 0. 0.
                                        0.
                                                 0.
                0.44554455 0.94554455 1.
0.
        0.
                                          1.
0.672413797
center_h : [0.51282051 0. 0. 0.
                                          0.
                                                    0.
                     0.94240838 1.
       0.
                 0.
0.51282051]
quick: [ 1. 0.1273076 -0.04310345 0. 0.
                                                      0.
 0.
      0.
                 0.17425065 0.89108911 1.
 1.
weno: [1.00000000e+00 1.16727283e-01 -5.74058317e-12 5.08097757e-13
 0.0000000e+00 0.0000000e+00 0.0000000e+00 -5.67845598e-14
 1.91465558e-12 9.64165518e-01 1.00000000e+00 1.00000000e+00
 1.0000000e+00]
_____
markers : [[8.75 0.25]]
                   0. 0.
T: [0.76923077 0.
                                  0.
                                             0.
0. 0.
                 0.76923077 1.
                                 1.
                                           1.
                                                  ]
_____
| Interpolations |
=============
upwind: [1.
               0.76923077 0.
0.
       0.
                0.
                     0.76923077 1.
                                          1.
1.
        1
                                        0.
center: [0.88461538 0.38461538 0.
                                                  0.
       0.
                0.38461538 0.88461538 1.
                                          1.
0.88461538]
center_h : [0.86956522 0.
                                          0.
                        0.
                              0.
                                                    0.
            0. 0.86956522 1.
0. 0.
                                          1.
0.869565221
quick : [ 1.
                0.50146178 -0.09615385 0.
                                             0.
                                                      0.
                 0.24342635 0.76923077 1.
 0. 0.
                                            1.
        1
 1.
weno: [1.00000000e+00 5.34457796e-01 -5.08907643e-13 4.57707173e-14
 0.0000000e+00 0.0000000e+00 0.0000000e+00 -8.82720977e-14
 3.20551431e-12 9.32630974e-01 1.00000000e+00 1.00000000e+00
 1.0000000e+001
markers : [[8.95 0.45]]
T: [0.89108911 0.
                  0. 0.
                                  0.
                                               0.
         0.
                 0.34482759 1. 1.
                                           1.
_____
| Interpolations |
_____
upwind: [1.
             0.89108911 0.
                                         0.
                                 0.
                                                  0.
0.
      0.
                0. 0.34482759 1.
                                          1.
```

```
center: [0.94554455 0.44554455 0. 0.
                                       0.
                                                0.
                0.17241379 0.67241379 1.
0.
        0.
                                         1.
0.94554455]
center_h : [0.94240838 0. 0. 0.
                                         0.
                                                   0.
       0.
                0. 0.51282051 1.
0.94240838]
quick: [ 1. 0.70973936 -0.11138614 0. 0.
                                                     0.
 0.
     0.
                 0.1331755 0.34482759 1.
 1.
weno: [9.9999999e-01 7.97500195e-01 -3.09237345e-13 2.94438458e-14
 0.0000000e+00 0.0000000e+00 0.0000000e+00 -9.79902817e-13
 4.58286068e-11 6.26244898e-01 1.00000000e+00 1.00000000e+00
 9.9999999e-01]
_____
markers : [[9.15 0.65]]
T: [0.94890511 0.
                         0. 0.
                  0.
                                            0.
0. 0.
                 0. 0.98265896 1.
                                          1.
                                                 ]
_____
| Interpolations |
==============
                               0.
upwind: [1.
               0.94890511 0.
                    0.
                                0.98265896 1.
0.
       0.
                0.
        1
center: [0.97445255 0.47445255 0. 0.
                                                 0.
               0. 0.49132948 0.99132948 1.
       0.
0.97445255]
center_h : [0.97378277 0.
                        0.
                                 0.
                                      0.
                                                   0.
                        0. 0.99125364 1.
0. 0.
            0.
0.97378277]
                0.84881901 -0.11861314 0.
quick : [ 1.
                                                     0.
 0. 0.
                 0. 0.03702638 0.98265896 1.
        1
 1.
weno: [9.93386695e-01 9.06209525e-01 -2.51716786e-13 2.43831429e-14
 0.0000000e+00 0.0000000e+00 0.0000000e+00 0.0000000e+00
-4.23433644e-14 1.38197729e-12 9.94219880e-01 1.00292740e+00
 9.93386695e-011
markers : [[9.35 0.85]]
T: [0.98265896 0.
                             0.
                                 0.
                 0.
                                             0.
                 0.
                    0.94890511 1.
         0.
                                       1.
_____
| Interpolations |
_____
upwind: [1.
               0.98265896 0. 0.
                                         0.
                                                 0.
0. 0.
                0.
                    0.
                               0.94890511 1.
```

```
center: [0.99132948 0.49132948 0. 0. 0.
                                            0.
             0. 0.47445255 0.97445255 1.
0.
       0.
0.99132948]
center_h : [0.99125364 0. 0. 0. 0.
                                             0.
                      0. 0.97378277 1.
      0.
              0.
0.99125364]
quick: [1. 0.94541478 -0.12283237 0. 0.
                                                0.
               0. 0.09832136 0.94890511 1.
 0. 0.
 1.
weno: [9.94194728e-01 9.68206702e-01 -2.24802505e-13 2.19558186e-14
 0.0000000e+00 0.0000000e+00 0.0000000e+00 0.0000000e+00
-4.70246327e-14 1.55094076e-12 9.82987433e-01 1.00303620e+00
 9.94194728e-01]
_____
markers : [[9.55 1.05]]
0.
                                     1.
                                              ]
_____
| Interpolations |
=============
              1. 0.34482759 0.
upwind: [1.
               0.
                      0. 0.89108911 1.
0.
       0.
1.
       1
             0.67241379 0.17241379 0.
center: [1.
                                              0.
               0.
                   0.44554455 0.94554455 1.
0.
      0.
      ]
1.
               0.51282051 0.
                               0. 0.
center h : [1.
                                              0.
               0. 0.94240838 1.
0. 0.
      1
1.
               1.
0.
                       0.1273076 -0.04310345 0.
quick : [ 1.
                                                 0.
 0. 0.
                         0.17425065 0.89108911 1.
       1
 1.
weno : [ 1.00000000e+00 1.00000000e+00 1.16727283e-01 -5.74058317e-12
 5.08097757e-13 0.00000000e+00 0.0000000e+00 0.0000000e+00
-5.67845598e-14 1.91465558e-12 9.64165518e-01 1.00000000e+00
 1.0000000e+001
============
markers : [[9.75 1.25]]
0.
                                         0.
                                    1.
_____
| Interpolations |
_____
upwind: [1.
              1. 0.76923077 0.
                                      0.
                                              0.
0. 0.
              0.
                      0. 0.76923077 1.
```

```
0.88461538 0.38461538 0. 0.
                                                0.
center: [1.
                        0.38461538 0.88461538 1.
0.
       0.
                0.
1.
        1
                0.86956522 0.
center h : [1.
                                 0. 0.
                                                   0.
0.
       0.
                 0. 0.86956522 1.
1.
        1
                1. 0.50146178 -0.09615385 0.
quick : [ 1.
                                                     0.
 0. 0.
                0.
                           0.24342635 0.76923077 1.
 1.
weno: [1.00000000e+00 1.00000000e+00 5.34457796e-01 -5.08907643e-13
 4.57707173e-14 0.00000000e+00 0.0000000e+00 0.0000000e+00
-8.82720977e-14 3.20551431e-12 9.32630974e-01 1.00000000e+00
 1.00000000e+00]
_____
markers : [[9.95 1.45]]
        0.89108911 0. 0. 0.
0. 0. 0.34482759 1.
T: [1.
                                            0.
0.
                                          1.
                                                  ]
_____
| Interpolations |
=============
                1. 0.89108911 0.
upwind: [1.
                0.
0.
       0.
                        0. 0.34482759 1.
1.
        7
                0.94554455 0.44554455 0.
center: [1.
                                                  0.
0.
                0.
                     0.17241379 0.67241379 1.
       0.
1.
       ]
                                      0.
center h : [1.
                0.94240838 0.
                                 0.
                                                   0.
                 0. 0.
0. 0.
                                0.51282051 1.
       1
1.
quick : [ 1.
                 1.
                          0.70973936 -0.11138614 0.
                                                     0.
 0. 0.
                0.
                            0.1331755 0.34482759 1.
        1
 1.
weno: [1.00000000e+00 9.9999999e-01 7.97500195e-01 -3.09237345e-13
 2.94438458e-14 0.00000000e+00 0.0000000e+00 0.0000000e+00
-9.79902817e-13 4.58286068e-11 6.26244898e-01 1.00000000e+00
 1.0000000e+001
markers : [[10.15 1.65]]
        0.94890511 0. 0.
T: [1.
                                     0.
                                            0.
                     0. 0.98265896 1.
         0.
                 0.
_____
| Interpolations |
_____
upwind: [1.
                       0.94890511 0. 0.
               1.
0.
      0.
               0.
                        0.
                            0.
                                        0.98265896
```

```
0.97445255 0.47445255 0. 0. 0.
center: [1.
              0. 0.49132948 0.99132948
0.
       0.
1.
       1
              0.97378277 0. 0. 0. 0.
center h : [1.
      0.
                              0. 0.99125364
0.
               0.
                      0.
1.
       1
               1. 0.84881901 -0.11861314 0. 0.
quick : [ 1.
 0. 0.
               0.
                         0. 0.03702638 0.98265896
 1.
weno: [1.00292740e+00 9.93386695e-01 9.06209525e-01 -2.51716786e-13
 2.43831429e-14 0.00000000e+00 0.0000000e+00 0.0000000e+00
 0.00000000e+00 -4.23433644e-14 1.38197729e-12 9.94219880e-01
 1.00292740e+00]
_____
markers : [[10.35 1.85]]
0.
                                          1
_____
| Interpolations |
=============
                                   0.
              1. 0.98265896 0.
upwind: [1.
               0.
                      0. 0.
                                     0.94890511
0.
       0.
1.
       1
              0.99132948 0.49132948 0. 0.
center: [1.
0.
      0.
               0.
                   0. 0.47445255 0.97445255
1.
      ]
               0.99125364 0.
                              0.
center h : [1.
                                      0. 0.
                             0.
0. 0.
               0. 0.
                                     0.97378277
      1
1.
               1.
quick : [ 1.
                      0.94541478 -0.12283237 0.
 0. 0.
              0.
                        0. 0.09832136 0.94890511
       1
 1.
weno: [1.00303620e+00 9.94194728e-01 9.68206702e-01 -2.24802505e-13
 2.19558186e-14 0.00000000e+00 0.0000000e+00 0.0000000e+00
 0.00000000e+00 -4.70246327e-14 1.55094076e-12 9.82987433e-01
 1.00303620e+00]
markers : [[10.55 2.05]]
T: [1. 1.
              0.34482759 0.
                                  0.
                                        0.
               0.
                   0. 0.89108911 1.
        0.
===============
| Interpolations |
_____
                     1. 0.34482759 0. 0.
upwind: [1.
              1.
0. 0.
              0.
                      0.
                             0. 0.89108911
```

```
1
                1. 0.67241379 0.17241379 0. 0.
center: [1.
                 0.
                         0.
                                 0.44554455 0.94554455
0.
        0.
1.
        1
                         0.51282051 0.
center h : [1.
                                           0. 0.
                 1.
0.
        0.
                 0.
                          0.
                                 0.
                                          0.94240838
1.
        1
                          1. 0.1273076 -0.04310345 0.
quick : [ 1.
                 1.
 0.
      0.
                 0.
                           0.
                                       0.17425065 0.89108911
 1.
weno: [1.00000000e+00 1.00000000e+00 1.00000000e+00 1.16727283e-01
-5.74058317e-12 5.08097757e-13 0.0000000e+00 0.0000000e+00
 0.00000000e+00 -5.67845598e-14 1.91465558e-12 9.64165518e-01
 1.0000000e+00]
_____
markers : [[10.75 2.25]]
                     0.76923077 0.
T: [1.
         1.
                                   0. 0.
0.
         0.
                 0.
                          0.
                              0.76923077 1.
                                                   ]
_____
| Interpolations |
============
upwind: [1.
                        1.
                                0.76923077 0.
                 1.
0.
        0.
                 0.
                         0.
                                  0.
                                          0.76923077
1.
        7
                        0.88461538 0.38461538 0.
center: [1.
                 1.
0.
                         Ο.
                                  0.38461538 0.88461538
       0.
                 0.
       ]
1.
center_h : [1.
                          0.86956522 0.
                                           0.
                                                0.
                  1.
0. 0.
                 0.
                          0. 0.
                                          0.86956522
        1
1.
                                   0.50146178 -0.09615385 0.
quick : [ 1.
                 1.
                           1.
 0.
       0.
                           0.
                                       0.24342635 0.76923077
                 0.
         1
 1.
weno: [1.00000000e+00 1.0000000e+00 1.00000000e+00 5.34457796e-01
-5.08907643e-13 4.57707173e-14 0.0000000e+00 0.0000000e+00
 0.00000000e+00 -8.82720977e-14 3.20551431e-12 9.32630974e-01
 1.0000000e+001
markers : [[10.95 2.45]]
                     0.89108911 0.
T: [1.
           1.
                                      0.
                                               0.
         0.
                 0.
                       0. 0.34482759 1.
                                                   ]
==============
| Interpolations |
_____
upwind: [1.
                        1. 0.89108911 0.
                 1.
0.
       0.
                 0.
                         0.
                                 0. 0.34482759
```

```
1
               1. 0.94554455 0.44554455 0. 0.
center: [1.
                0.
                       0.
                                0.17241379 0.67241379
0.
       0.
1.
        1
                        0.94240838 0.
                                        0. 0.
center h : [1.
                1.
0.
       0.
                 0.
                         0.
                              0.
                                     0.51282051
1.
       1
                         1. 0.70973936 -0.11138614 0.
quick : [ 1.
                 1.
 0.
      0.
                0.
                         0.
                                     0.1331755 0.34482759
 1.
weno: [1.00000000e+00 1.00000000e+00 9.9999999e-01 7.97500195e-01
-3.09237345e-13 2.94438458e-14 0.0000000e+00 0.0000000e+00
 0.00000000e+00 -9.79902817e-13 4.58286068e-11 6.26244898e-01
 1.0000000e+00]
_____
markers : [[11.15 2.65]]
                    0.94890511 0.
T: [1.
        1.
                                 0.
                                             0.
0.
        0.
                0.
                     0.
                            0.
                                         0.98265896]
_____
| Interpolations |
===========
upwind: [0.98265896 1.
                       1. 0.94890511 0.
       0.
                        0.
0.
                0.
                                0.
                                        0.
0.982658961
                      0.97445255 0.47445255 0.
center: [0.99132948 1.
      0.
                        0.
                             0.
                                    0.49132948
            0.
0.99132948]
                        0.97378277 0.
center_h : [0.99125364 1.
                                         0.
                                                  0.
0. 0.
            0.
                         0. 0.
                                         0.
0.99125364]
                         1.
quick: [ 0.98265896 1.
                                 0.84881901 -0.11861314 0.
 0. 0.
                         0.
                                              0.03702638
                                     0.
 0.98265896]
weno: [9.94219880e-01 1.00292740e+00 9.93386695e-01 9.06209525e-01
-2.51716786e-13 2.43831429e-14 0.00000000e+00 0.00000000e+00
 0.00000000e+00 0.00000000e+00 -4.23433644e-14 1.38197729e-12
 9.94219880e-01]
markers : [[11.35 2.85]]
                    0.98265896 0.
T: [1.
        1.
                                 0.
                                             0.
                             0.
        0.
                0.
                     0.
                                     0.94890511]
| Interpolations |
_____
                      1. 0.98265896 0.
upwind: [0.94890511 1.
                                              0.
```

0.

0.

0.

0.

0.

0.

```
0.948905117
\texttt{center} \; : \; \begin{bmatrix} 0.97445255 \; 1. & 0.99132948 \; 0.49132948 \; 0. & 0. \\ \end{bmatrix}
                        0. 0.
0.
        0.
             0.
                                      0.47445255
0.97445255]
center_h : [0.97378277 1. 0.99125364 0. 0. 0.
       0.
             0.
                         0.
                               0.
                                          0.
0.97378277]
quick: [ 0.94890511 1. 1. 0.94541478 -0.12283237 0.
      0. 0.
                         0.
                                     0.
                                               0.09832136
 0.948905117
weno: [9.82987433e-01 1.00303620e+00 9.94194728e-01 9.68206702e-01
-2.24802505e-13 2.19558186e-14 0.00000000e+00 0.00000000e+00
 0.00000000e+00 0.00000000e+00 -4.70246327e-14 1.55094076e-12
 9.82987433e-01]
_____
markers : [[11.55 3.05]]
                1. 0.34482759 0. 0.
0. 0. 0. 0.89108911]
T: [1.
         1.
0.
        0.
_____
| Interpolations |
============
upwind: [0.89108911 1.
                                1. 0.34482759 0.
                       1.
                         0.
                                 0.
0. 0. 0.
                                          0.
0.89108911]
                       1. 0.67241379 0.17241379 0.
center: [0.94554455 1.
      0. 0.
                         0.
                                 0.
                                          0.44554455
0.94554455]
center_h : [0.94240838 1.
                        1.
                                  0.51282051 0.
                                                0.
0. 0. 0.
                         0.
                                  0. 0.
0.94240838]
quick: [ 0.89108911 1. 1. 1. 0.1273076
-0.04310345
         0. 0. 0.
 0.
                                              0.17425065
 0.89108911]
weno : [ 9.64165518e-01 1.00000000e+00 1.00000000e+00 1.00000000e+00
 1.16727283e-01 -5.74058317e-12 5.08097757e-13 0.00000000e+00
 0.0000000e+00 0.0000000e+00 -5.67845598e-14 1.91465558e-12
 9.64165518e-01]
=============
markers : [[11.75 3.25]]
                 1. 0.76923077 0.
0. 0. 0.
                                           0.
T: [1.
        1.
                                      0.76923077]
0.
         0.
===========
| Interpolations |
============
```

upwind: [0.76923077 1.

1. 1. 0.76923077 0.

```
0. 0.
              0. 0. 0. 0.
0.769230771
center: [0.88461538 1.
                                       0.88461538 0.38461538 0.
                            1.
0.
          0.
                    0.
                             0.
                                       Ο.
                                                  0.38461538
0.884615387
center h : [0.86956522 1.
                              1.
                                        0.86956522 0.
                                                             0.
          0.
                    0.
                              0.
                                        0.
                                                  0.
0.869565221
quick: [ 0.76923077 1.
                              1.
                                        1.
                                                     0.50146178
-0.09615385
 0.
            0.
                       0.
                                 0.
                                            0.
                                                       0.24342635
 0.76923077]
weno : [ 9.32630974e-01 1.00000000e+00 1.00000000e+00 1.00000000e+00
 5.34457796e-01 -5.08907643e-13 4.57707173e-14 0.00000000e+00
 0.0000000e+00 0.00000000e+00 -8.82720977e-14 3.20551431e-12
 9.32630974e-011
===========
markers : [[11.95 3.45]]
                                 0.89108911 0.
T : Γ1.
               1.
                        1.
                                                      0.
                              0.
                                        0.
          0.
                    0.
                                                  0.344827591
| Interpolations |
_____
upwind: [0.34482759 1.
                             1.
                                       1.
                                                 0.89108911 0.
0.
         0.
                              0.
                                       0.
                                                  0.
                    0.
0.34482759]
center: [0.67241379 1.
                                     0.94554455 0.44554455 0.
                             1.
                                       Ο.
                                                  0.17241379
0.
          0.
                    0.
                              0.
0.67241379]
center_h : [0.51282051 1.
                                        0.94240838 0.
                              1.
          0.
                    0.
                              0.
                                        0.
                                                  0.
0.51282051]
quick: [ 0.34482759 1.
                              1.
                                        1.
                                                   0.70973936
-0.11138614
 0.
                       0.
            0.
                                 0.
                                            0.
                                                       0.1331755
 0.34482759]
weno: [6.26244898e-01 1.00000000e+00 1.00000000e+00 9.99999999e-01
 7.97500195e-01 -3.09237345e-13 2.94438458e-14 0.00000000e+00
 0.0000000e+00 0.0000000e+00 -9.79902817e-13 4.58286068e-11
 6.26244898e-011
_____
markers : [[0.15 3.65]]
T: [0.98265896 1.
                       1.
                                 0.94890511 0.
                                                      0.
                    0.
                              0.
                                                  0.
                                        0.
| Interpolations |
```

```
upwind: [0.
            0.98265896 1. 1. 0.94890511 0.
                               0.
0.
       0.
               0.
                    0.
                                        0.
0.
       1
                             0.97445255 0.47445255 0.
center: [0.49132948 0.99132948 1.
       0.
               0.
                      0.
                               0.
                                       0.
0.49132948]
center_h : [0. 0.99125364 1.
                               0.97378277 0.
                                            0.
0.
      0.
                0. 0.
                               0. 0.
0.
       1
quick: [ 0.03702638 0.98265896 1. 1. 0.84881901
-0.11861314
             0. 0. 0.
 0.
        0.
                                            0.
 0.037026381
weno: [1.38197729e-12 9.94219880e-01 1.00292740e+00 9.93386695e-01
 9.06209525e-01 -2.51716786e-13 2.43831429e-14 0.00000000e+00
 0.0000000e+00 0.0000000e+00 0.0000000e+00 -4.23433644e-14
 1.38197729e-12]
_____
markers : [[0.35 3.85]]
               1. 0.98265896 0. 0.
0. 0. 0. 0.
T: [0.94890511 1.
        0.
                                            1
_____
| Interpolations |
_____
upwind: [0. 0.94890511 1. 1. 0.98265896 0.
0.
       0.
               0. 0.
                               0.
                                       0.
       ]
0.
center: [0.47445255 0.97445255 1.
                             0.99132948 0.49132948 0.
                       0.
                               0.
0.
       0.
               0.
                                       0.
0.47445255]
center_h : [0.
              0.97378277 1.
                              0.99125364 0. 0.
0. 0.
               0. 0.
                               0.
                                   0.
0.
       ]
-0.12283237
             0. 0. 0.
 0.
          0.
                                            0.
 0.09832136]
weno: [1.55094076e-12 9.82987433e-01 1.00303620e+00 9.94194728e-01
 9.68206702e-01 -2.24802505e-13 2.19558186e-14 0.00000000e+00
 0.00000000e+00 0.00000000e+00 0.00000000e+00 -4.70246327e-14
 1.55094076e-12]
=============
markers : [[0.55 4.05]]
T: [0.89108911 1. 1.
                          1. 0.34482759 0.
0.
        0.
               0.
                       0.
                              0.
                                        0.
                                               ]
```

```
_____
| Interpolations |
_____
upwind: [0.
                                      1.
                                                1. 0.34482759
                   0.89108911 1.
0.
                                       0.
                                                 0.
         0.
                    0.
                             0.
         1
center: [0.44554455 0.94554455 1.
                                      1.
                                                 0.67241379 0.17241379
0.
                              0.
                                        0.
                                                  0.
0.44554455]
center_h : [0.
                    0.94240838 1.
                                                  0.51282051 0.
                                        1.
0.
         0.
                    0.
                              0.
                                        0.
                                                  0.
0.
         ]
quick: [ 0.17425065 0.89108911 1.
                                         1.
                                                     1.
                                                                0.1273076
-0.04310345 0.
                       0.
                                  0.
                                             0.
                                                        0.
 0.17425065]
weno: [1.91465558e-12 9.64165518e-01 1.00000000e+00 1.00000000e+00
 1.00000000e+00 1.16727283e-01 -5.74058317e-12 5.08097757e-13
 0.00000000e+00 0.00000000e+00 0.00000000e+00 -5.67845598e-14
 1.91465558e-12]
_____
markers : [[0.75 4.25]]
T: [0.76923077 1.
                        1.
                                 1.
                                           0.76923077 0.
                              0.
                                        0.
                    0.
                                                  0.
                                                           1
          0.
| Interpolations |
===============
upwind: [0.
                   0.76923077 1.
                                       1.
                                                1.
                                                          0.76923077
0.
                    0.
         0.
                              0.
                                       0.
                                                 0.
0.
         ]
center: [0.38461538 0.88461538 1.
                                       1.
                                                 0.88461538 0.38461538
          0.
                    0.
                              0.
                                       0.
                                                  0.
0.38461538]
center_h : [0.
                    0.86956522 1.
                                        1.
                                                  0.86956522 0.
0.
          0.
                              0.
                                        0.
                                                  0.
                    0.
0.
         1
quick: [ 0.24342635 0.76923077 1.
                                        1.
0.50146178
-0.09615385 0.
                       0.
                                  0.
                                             0.
                                                        0.
 0.243426351
weno : [ 3.20551431e-12 9.32630974e-01 1.00000000e+00 1.00000000e+00
 1.00000000e+00 5.34457796e-01 -5.08907643e-13 4.57707173e-14
 0.00000000e+00 0.00000000e+00 0.00000000e+00 -8.82720977e-14
 3.20551431e-12]
_____
markers : [[0.95 4.45]]
```

24

1. 0.89108911 0.

1.

T: [0.34482759 1.

```
0. 0. 0. 0.
                                                         1
          0.
===========
| Interpolations |
===========
                                               1. 0.89108911
upwind: [0.
                   0.34482759 1.
                                     1.
0.
         0.
                   0.
                             0.
                                      0.
                                                Ο.
0.
         1
center: [0.17241379 0.67241379 1.
                                      1.
                                               0.94554455 0.44554455
          0.
                   0.
                             0.
                                      0.
                                                0.
0.172413797
                                                 0.94240838 0.
center_h : [0.
                   0.51282051 1.
                                       1.
0.
         0.
                   0.
                             0.
                                       0.
                                                0.
         ]
0.
quick: [ 0.1331755
                  0.34482759 1.
                                      1.
                                                   1.
0.70973936
-0.11138614 0.
                      0.
                                 0.
                                           0.
                                                      0.
 0.1331755 ]
weno: [4.58286068e-11 6.26244898e-01 1.00000000e+00 1.00000000e+00
 9.9999999e-01 7.97500195e-01 -3.09237345e-13 2.94438458e-14
 0.0000000e+00 0.0000000e+00 0.0000000e+00 -9.79902817e-13
 4.58286068e-117
______
markers : [[1.15 4.65]]
              0.98265896 1.
T : [0.
                             1.
                                       0.94890511 0.
                             0.
                                       0.
0.
          0.
                    0.
                                                0.
                                                         ]
===========
| Interpolations |
_____
upwind: [0.
                   0.
                           0.98265896 1.
                                              1.
                                                        0.94890511
                             0.
0.
         0.
                   0.
                                      0.
                                                0.
0.
         1
                                             0.97445255 0.47445255
center : [0.
                   0.49132948 0.99132948 1.
0.
         0.
                   0.
                             0.
                                     0.
                                                0.
0.
         ]
center h : [0.
                   0.
                             0.99125364 1.
                                                0.97378277 0.
          0.
0.
                    0.
                             0.
                                       0.
                                                0.
         1
0.
quick : [ 0.
                   0.03702638 0.98265896 1.
0.84881901
-0.11861314 0.
                      0.
                                0.
                                           0.
                                                      0.
          ]
 0.
weno : [-4.23433644e-14 1.38197729e-12 9.94219880e-01 1.00292740e+00
 9.93386695e-01 9.06209525e-01 -2.51716786e-13 2.43831429e-14
 0.0000000e+00 0.0000000e+00 0.0000000e+00 0.0000000e+00
-4.23433644e-14]
```

-----

```
markers : [[1.35 4.85]]
T: [0. 0.94890511 1. 1. 0.98265896 0. 0. 0. 0. 0. 0.
============
| Interpolations |
==============

      0.
      0.94890511 1.
      1.
      0.98265896

      0.
      0.
      0.

upwind: [0.
0.
        0.
0.
        1
                0.47445255 0.97445255 1. 0.99132948 0.49132948
center : [0.
                 0. 0. 0.
0.
        0.
                                            0.
        ]
0.
                 0.0.97378277 1.0.99125364 0.0.0.0.
center_h : [0.
0.
        0.
0.
        ]
                0.09832136 0.94890511 1.
quick : [ 0.
                                             1.
0.94541478
-0.12283237 0. 0. 0. 0.
 0. ]
weno: [-4.70246327e-14 1.55094076e-12 9.82987433e-01 1.00303620e+00
 9.94194728e-01 9.68206702e-01 -2.24802505e-13 2.19558186e-14
 0.0000000e+00 0.0000000e+00 0.0000000e+00 0.0000000e+00
-4.70246327e-14]
markers : [[1.55 5.05]]
T: [0. 0.89108911 1. 1. 1. 0.34482759 0. 0. 0. 0. ]
| Interpolations |
_____
              0. 0.89108911 1.
upwind: [0.
                                            1.
                 0.
                                             0.
0.34482759 0.
                          0. 0.
0. ]
center: [0.
                0.44554455 0.94554455 1.
                                            1. 0.67241379
                 0. 0. 0.
                                            0.
0.17241379 0.
0. ]
                 0. 0.94240838 1. 1.
center_h : [0.
                                                       0.51282051
                 0. 0. 0.
                                           0.
0.
        0.
0. ]

      quick: [ 0.
      0.17425065
      0.89108911
      1.
      1.

      0.1273076
      -0.04310345
      0.
      0.
      0.
      0.

                                                     1.
 0.
      1
weno: [-5.67845598e-14 1.91465558e-12 9.64165518e-01 1.00000000e+00
 1.00000000e+00 1.00000000e+00 1.16727283e-01 -5.74058317e-12
 5.08097757e-13 0.00000000e+00 0.0000000e+00 0.0000000e+00
-5.67845598e-14]
```

```
markers : [[1.75 5.25]]
T : [O.
        0.76923077 1. 1. 1. 1.
0. 0. 0. 0.
                                        0.76923077
                                    0.
                                               1
| Interpolations |
_____
upwind: [0.
              0. 0.76923077 1. 1.
                                               1.
0.76923077 0.
               0.
                       0. 0.
                                       0.
   1
0.
                                    1. 0.88461538
             0.38461538 0.88461538 1.
center : [0.
0.38461538 0.
               0.
                    0. 0.
                                      0.
0. ]
center_h : [0.
                       0.86956522 1.
               0.
                                     0.
                                       1.
                                               0.86956522
               0. 0.86956522 1.
0. 0. 0.
       Ο.
0.
      1
0.
 quick : [ 0.
                                                  1.
 0. 1
weno : [-8.82720977e-14 3.20551431e-12 9.32630974e-01 1.00000000e+00
 1.00000000e+00 1.00000000e+00 5.34457796e-01 -5.08907643e-13
 4.57707173e-14 0.00000000e+00 0.0000000e+00 0.00000000e+00
-8.82720977e-14]
markers : [[1.95 5.45]]
T: [0. 0.34482759 1. 1. 1. 0.89108911
                             0.
                       0.
                                      0.
0.
                0.
        0.
===============
| Interpolations |
_____
upwind: [0.
              0. 0.34482759 1.
                                      1.
              0.
0.89108911 0.
                       0. 0.
                                       0.
0.
      1
center : [0.
              0.17241379 0.67241379 1.
                                      1.
                                            0.94554455
               0. 0. 0.
0.44554455 0.
                                       0.
0. ]
               0.
                                      1.
                       0.51282051 1.
center_h : [0.
                                               0.94240838
               0. 0. 0.
0.
       0.
                                       0.
       1
           0.1331755 0.34482759 1. 1.
quick : [ 0.
                                                 1.
 0.70973936 -0.11138614 0. 0. 0.
 0.
        ]
weno: [-9.79902817e-13 4.58286068e-11 6.26244898e-01 1.00000000e+00
 1.00000000e+00 9.9999999e-01 7.97500195e-01 -3.09237345e-13
 2.94438458e-14 0.00000000e+00 0.0000000e+00 0.0000000e+00
-9.79902817e-13]
```

```
markers : [[2.15 5.65]]
           0.
                    0.98265896 1. 1.
T : [0.
                                             0.94890511
                  0.
                      0. 0.
                                        0.
                                                    1
         0.
| Interpolations |
_____
upwind: [0.
                 0.
                         0. 0.98265896 1.
                                                    1.
0.94890511 0.
                 0.
                         0.
                                  0. 0.
0.
       1
center : [0.
                        0.49132948 0.99132948 1. 0.97445255
                 0.
                                       0.
0.47445255 0.
                 0.
                         0.
                                0.
0. ]
center_h : [0.
                 0.
                          0.
                                   0.99125364 1.
                                                    0.97378277
                          0. 0. 0.
        0.
0.
                 0.
        1
0.

    nick:
    [ 0.
    0.03702638 0.98265896 1.

    0.84881901 -0.11861314 0.
    0.
    0.

quick : [ 0.
                                                        1.
 0.
weno : [ 0.00000000e+00 -4.23433644e-14 1.38197729e-12 9.94219880e-01
 1.00292740e+00 9.93386695e-01 9.06209525e-01 -2.51716786e-13
 2.43831429e-14 0.00000000e+00 0.0000000e+00 0.00000000e+00
 0.0000000e+001
markers : [[2.35 5.85]]
T : [O.
         0.
                    0.94890511 1. 1. 0.98265896
                                  0.
                  0.
                         0.
                                          0.
0.
                                                    ]
         0.
| Interpolations |
upwind: [0.
                 0.
                                 0.94890511 1.
                        0.
                 0.
0.98265896 0.
                         0.
                                  0. 0.
0.
       1
center: [0.
                        0.47445255 0.97445255 1.
                                                  0.99132948
                 0.
0.49132948 0.
                         0. 0. 0.
                 0.
0.
                          0.
                 0.
                                   0.97378277 1.
center_h : [0.
                                                    0.99125364
                          0. 0. 0.
0.
        0.
                 0.
0.
        1
                0. 0.09832136 0.94890511 1.
quick : [ 0.
                                                      1.
 0.94541478 -0.12283237 0. 0.
                                       0.
                                                 0.
         ]
weno: [0.00000000e+00-4.70246327e-14 1.55094076e-12 9.82987433e-01
 1.00303620e+00 9.94194728e-01 9.68206702e-01 -2.24802505e-13
 2.19558186e-14 0.00000000e+00 0.0000000e+00 0.0000000e+00
 0.0000000e+00]
```

```
markers : [[2.55 6.05]]
                  0.89108911 1. 1.
T : [0.
        0.
                                         1.
                                     0.
0.34482759 0.
                0.
                    0. 0.
============
| Interpolations |
_____
upwind: [0.
                      0.
               0.
                               0.89108911 1.
                                               1.
1. 0.34482759 0.
                       0.
                               0. 0.
0.
       1
                     0.44554455 0.94554455 1.
center : [0. 0.
                                               1.
0.67241379 0.17241379 0.
                       0.
                             0.
                                    0.
0. ]
center_h : [0.
               0.
                       0.
                                0.94240838 1.
            0.
                     0. 0. 0.
0.51282051 0.
0.
quick : [ 0.
           0. 0.17425065 0.89108911 1.
                                                   1.
      0.1273076 -0.04310345 0. 0.
 0.
weno: [0.00000000e+00-5.67845598e-14 1.91465558e-12 9.64165518e-01
 1.00000000e+00 1.00000000e+00 1.00000000e+00 1.16727283e-01
-5.74058317e-12 5.08097757e-13 0.00000000e+00 0.00000000e+00
 0.0000000e+001
===========
markers : [[2.75 6.25]]
T : [0. 0.
                  0.76923077 1. 1.
                              0.
                0.
                                       0.
0.76923077 0.
                       0.
| Interpolations |
_____
                    0.
0.
upwind : [0. 0.
                               0.76923077 1.
       0.76923077 0.
                               0.
1.
                                       0.
0.
       1
                      0.38461538 0.88461538 1.
center: [0.
               0.
                                               1.
                       0. 0. 0.
0.88461538 0.38461538 0.
0. ]
               0.
                        0.
center h : [0.
                                0.86956522 1.
                      0. 0. 0.
0.86956522 0.
               0.
0. ]
              0. 0.24342635 0.76923077 1.
quick : [ 0.
 1. 0.50146178 -0.09615385 0. 0.
                                            0.
weno: [0.00000000e+00-8.82720977e-14 3.20551431e-12 9.32630974e-01
 1.00000000e+00 1.00000000e+00 1.00000000e+00 5.34457796e-01
-5.08907643e-13 4.57707173e-14 0.0000000e+00 0.0000000e+00
 0.0000000e+00]
```

```
markers : [[2.95 6.45]]
                   0.34482759 1. 1.
T : [0.
        0.
                                           1.
                                      0.
0.89108911 0.
                 0.
                     0. 0.
============
| Interpolations |
_____
upwind: [0.
                0.
                       0.
                                 0.34482759 1.
                                                 1.
1. 0.89108911 0.
                        0.
                                 0. 0.
        1
0.
center : [0. 0.
                      0.17241379 0.67241379 1.
                                                 1.
0.94554455 0.44554455 0.
                        0.
                                0.
                                      0.
0. ]
center_h : [0.
                0.
                         0.
                                 0.51282051 1.
                      0. 0. 0.
              0.
0.94240838 0.
0.
quick : [ 0.
                0.
                    0.1331755 0.34482759 1.
                                                     1.
       0.70973936 -0.11138614 0.
                                   0.
 0.
weno: [0.00000000e+00 -9.79902817e-13 4.58286068e-11 6.26244898e-01
 1.00000000e+00 1.00000000e+00 9.9999999e-01 7.97500195e-01
-3.09237345e-13 2.94438458e-14 0.00000000e+00 0.00000000e+00
 0.0000000e+001
===========
markers : [[3.15 6.65]]
                         0.98265896 1.
T : [0.
        0.
                    0.
                        0.
                                        0.
0.94890511 0.
                 0.
                                 0.
===============
| Interpolations |
_____
upwind : [0. 0.
                       0.
                               0.
                                         0.98265896 1.
1.
       0.94890511 0.
                        0.
                                0.
                                          0.
0.
       ]
                       0.
                               0.49132948 0.99132948 1.
center: [0.
                0.
0.97445255 0.47445255 0.
                        0.
                                 0.
                                       0.
0. ]
center_h : [0.
                                 0.
                0.
                         0.
                                         0.99125364 1.
0.97378277 0.
                0.
                         0.
                                 0. 0.
0. ]
quick : [ 0.
              0.
                     0.
                                 0.03702638 0.98265896 1.
 1. 0.84881901 -0.11861314 0.
                                   0.
                                              0.
weno: [0.00000000e+00 0.00000000e+00 -4.23433644e-14 1.38197729e-12
 9.94219880e-01 1.00292740e+00 9.93386695e-01 9.06209525e-01
-2.51716786e-13 2.43831429e-14 0.00000000e+00 0.00000000e+00
 0.0000000e+00]
```

```
_____
markers : [[3.35 6.85]]
                0.
                        0.94890511 1. 1.
T : [0.
        0.
                0. 0. 0. 0. ]
0.98265896 0.
============
| Interpolations |
_____
upwind: [0.
                       0.
                              0. 0.94890511 1.
                0.
1. 0.98265896 0.
                       0.
                               0.
                                       0.
0.
       1
                             0.47445255 0.97445255 1.
center : [0. 0.
                      0.
0.99132948 0.49132948 0.
                       0.
                               0.
                                       0.
0. ]
0.
               0.
                        0.
                                        0.97378277 1.
                     0. 0. 0.
0. ]
 1. 0.94541478 -0.12283237 0. 0. 0.09832136 0.94890511 1. 0. 0. 0. 1
quick: [ 0. 0.
weno : [ 0.0000000e+00 0.0000000e+00 -4.70246327e-14 1.55094076e-12
 9.82987433e-01 1.00303620e+00 9.94194728e-01 9.68206702e-01
-2.24802505e-13 2.19558186e-14 0.00000000e+00 0.00000000e+00
 0.0000000e+001
markers : [[3.55 7.05]]
        0. 0. 0.89108911 1. 1.
0.34482759 0. 0. 0. 0.
T : [0. 0.
| Interpolations |
0. 0.

      0.
      0.
      0.89108911 1.

      0.34482759 0.
      0.
      0.

upwind: [0.
1. 1.
0.
       1
center: [0. 0. 0.
                              0.44554455 0.94554455 1.
       0.67241379 0.17241379 0.
                               0. 0.
      ]
                                0. 0.94240838 1.
center_h : [0. 0. 0.
                              0. 0.
      0.51282051 0. 0.
      ]
quick: [ 0. 0. 0.17425065 0.89108911 1.
 1. 1.
               0.1273076 -0.04310345 0.
weno: [0.00000000e+00 0.00000000e+00 -5.67845598e-14 1.91465558e-12
 9.64165518e-01 1.00000000e+00 1.00000000e+00 1.00000000e+00
 1.16727283e-01 -5.74058317e-12 5.08097757e-13 0.00000000e+00
 0.0000000e+00]
```

```
markers : [[3.75 7.25]]

      0.
      0.76923077 1.
      1.

      0.76923077 0.
      0.
      0.
      0.
      0.
      ]

T : [0.
| Interpolations |
_____
upwind: [0. 0. 0. 0. 0.76923077 1.
1. 1.
                 0.76923077 0.
                                      0.
                                                0.
0.
         1
center: [0. 0. 0. 0.38461538 0.88461538 1.
1. 0.88461538 0.38461538 0.
                                      0.
                                             0.
        ]
0.
       0.86956522 0. 0. 0. 0. 0.86956522 1. 0.86956522 1.
center_h : [0. 0.
0.

      quick: [ 0.
      0.
      0.
      0.24342635
      0.76923077
      1.

      1.
      1.
      0.50146178 -0.09615385
      0.
      0.

 0.
weno: [0.00000000e+00 0.00000000e+00 -8.82720977e-14 3.20551431e-12
 9.32630974e-01 1.00000000e+00 1.0000000e+00 1.0000000e+00
 5.34457796e-01 -5.08907643e-13 4.57707173e-14 0.00000000e+00
 0.0000000e+001
markers : [[3.95 7.45]]
T: [0. 0. 0. 0.34482759 1. 1. 1. 0.89108911 0. 0. 0. 0. 0.
| Interpolations |
==========
              0. 0. 0. 0. 0.34482759 1. 0.89108911 0. 0. 0.
upwind: [0.
1. 1.
0.
        ]
center: [0. 0. 0.
                                     0.17241379 0.67241379 1.
                                     0. 0.
        0.94554455 0.44554455 0.
        ]
0. 0.51282051 1.
quick: [0. 0. 0. 0.1331755 0.34482759 1. 1. 0.70973936 -0.11138614 0. 0.
weno: [0.00000000e+00 0.00000000e+00 -9.79902817e-13 4.58286068e-11
 6.26244898e-01 1.00000000e+00 1.00000000e+00 9.9999999e-01
 7.97500195e-01 -3.09237345e-13 2.94438458e-14 0.00000000e+00
 0.0000000e+00]
```

```
_____
markers : [[4.15 7.65]]
                                     0.98265896 1.
T : [0.
                    0.
                           0.
            0.
                     0.
                                  0.
         0.94890511 0.
                                           0.
                                                   1
| Interpolations |
_____
upwind: [0.
                                  0.
                                          0.
                0.
                         0.
                                                  0.98265896
1.
       1.
                0.94890511 0.
                                  0.
                                          0.
0.
        1
                                          0.49132948 0.99132948
center: [0.
                0.
                         0.
                                  0.
1.
       0.97445255 0.47445255 0.
                                 0.
                                           0.
       ]
0.
center_h : [0. 0.
                           0.
                                  0.
                                           0.
                                                   0.99125364
1.
        0.97378277 0.
                          0.
                                  0.
                                           0.
        1
0.
quick : [ 0.
              0.
                         0.
                             0.
                                            0.03702638
0.98265896
 1.
         1.
              0.84881901 -0.11861314 0.
                                                0.
         1
 0.
weno: [0.00000000e+00 0.00000000e+00 0.00000000e+00 -4.23433644e-14
 1.38197729e-12 9.94219880e-01 1.00292740e+00 9.93386695e-01
 9.06209525e-01 -2.51716786e-13 2.43831429e-14 0.00000000e+00
 0.0000000e+001
===========
markers : [[4.35 7.85]]
T : [0.
                                     0.94890511 1.
             0.
                     0.
                            0.
                                  0.
1.
         0.98265896 0.
                          0.
                                           0.
                                                   1
===========
| Interpolations |
_____
upwind: [0.
                                  0.
                                          0. 0.94890511
                0.
                         0.
                                          0.
1.
        1.
                0.98265896 0.
                                  0.
0.
        1
center: [0.
                                 0.
                                          0.47445255 0.97445255
                0.
                         0.
1.
       0.99132948 0.49132948 0.
                                 0.
                                          0.
       ]
center_h : [0. 0.
                          0.
                                  0.
                                           0.
                                                0.97378277
1.
        0.99125364 0.
                          0.
                                  0.
                                           0.
       1
0.
quick : [ 0.
             0.
                     0. 0.
                                            0.09832136
0.94890511
                  0.94541478 -0.12283237 0.
 1.
         1.
                                                0.
         ]
 0.
      1.55094076e-12 9.82987433e-01 1.00303620e+00 9.94194728e-01
 9.68206702e-01 -2.24802505e-13 2.19558186e-14 0.00000000e+00
```

## 0.0000000e+00]

```
_____
markers : [[4.55 8.05]]
              0. 0.89108911 1.
T : [0. 0.
                0.34482759 0.
                             0.
        1.
                                        0.
| Interpolations |
_____
                                      0. 0.89108911
               0. 0. 0.
upwind: [0.
               1.
                    0.34482759 0.
1.
       1.
                                     0.
0.
       1
                                      0.44554455 0.94554455
center : [0.
               0. 0.
                           0.
               0.67241379 0.17241379 0.
1.
                                       0.
       1.
0.
                0. 0.
                                      0. 0.94240838
center_h : [0.
                               0.
1.
       1.
                0.51282051 0.
                               0.
                                       0.
0.
       ]
quick : [ 0.
               0. 0. 0. 0.17425065
0.89108911
 1.
               1. 0.1273076 -0.04310345 0.
        1.
 0.
weno: [0.00000000e+00 0.00000000e+00 0.00000000e+00 -5.67845598e-14
 1.91465558e-12 9.64165518e-01 1.00000000e+00 1.00000000e+00
 1.00000000e+00 1.16727283e-01 -5.74058317e-12 5.08097757e-13
 0.0000000e+00]
_____
markers : [[4.75 8.25]]
T: [0. 0. 0. 0. 0.76923077 1.
                              0.
                0.76923077 0.
        1.
                                        0.
==============
| Interpolations |
============
upwind: [0.
               0.
                      0. 0.
                                      0. 0.76923077
                    0.76923077 0.
               1.
1.
       1.
                                       0.
0.
       1
center : [0.
               0.
                       0.
                               0.
                                      0.38461538 0.88461538
1.
               0.88461538 0.38461538 0.
                                      0.
0.
                0. 0.
                                      0. 0.86956522
center_h : [0.
                                0.
1.
                0.86956522 0.
                               0.
       1.
                                        Ο.
0.
quick : [ 0.
               0. 0. 0. 0.24342635
0.76923077
               1. 0.50146178 -0.09615385 0.
 1.
       1.
 0.
weno: [0.00000000e+00 0.0000000e+00 0.00000000e+00 -8.82720977e-14
```

```
1.00000000e+00 5.34457796e-01 -5.08907643e-13 4.57707173e-14
 0.0000000e+00]
==========
markers : [[4.95 8.45]]
               0. 0.34482759 1.
T : [0.
       0.
               0.89108911 0. 0.
        1.
                                      0.
                                             1
| Interpolations |
===============
               0.
                    0. 0.
                                   0. 0.34482759
upwind: [0.
      1.
1.
               1.
                      0.89108911 0.
                                      0.
0.
      1
                                   0.17241379 0.67241379
center: [0.
               0. 0. 0.
     1.
1.
               0.94554455 0.44554455 0.
                                      0.
0.
      ]
               0. 0.
center_h : [0.
                              0.
                                      0.
                                           0.51282051
1. 1.
               0.94240838 0.
                           0.
                                     0.
      1
0.
quick : [ 0.
              0. 0. 0. 0.1331755
0.34482759
              1. 0.70973936 -0.11138614 0.
 1. 1.
 0.
weno : [ 0.00000000e+00 0.0000000e+00 0.00000000e+00 -9.79902817e-13
 4.58286068e-11 6.26244898e-01 1.00000000e+00 1.00000000e+00
 9.9999999e-01 7.97500195e-01 -3.09237345e-13 2.94438458e-14
 0.0000000e+00]
===========
markers : [[5.15 8.65]]
                0. 0.
T : [0.
       0.
                               0.
                                      0.98265896
              0.94890511 0. 0.
                                     0.
1.
       1.
                                             ]
===========
| Interpolations |
_____
                    0. 0.
               0.
upwind: [0.
                                     0.
0.98265896 1.
               1.
                     0.94890511 0.
                                      0.
0.
      1
                                    0.
center : [0.
               0. 0.
                                            0.49132948
                              0.
0.99132948 1.
               0.97445255 0.47445255 0.
                                     0.
0.
center_h : [0.
               0. 0.
                              0.
                                      0.
                                              0.
0.99125364 1.
               0.97378277 0.
                            0.
                                     0.
0.
             0. 0. 0.
quick : [ 0.
0.03702638
 0.98265896 1. 1. 0.84881901 -0.11861314 0.
```

3.20551431e-12 9.32630974e-01 1.00000000e+00 1.00000000e+00

```
weno : [ 0.00000000e+00 0.0000000e+00 0.00000000e+00 0.00000000e+00
-4.23433644e-14 1.38197729e-12 9.94219880e-01 1.00292740e+00
 9.93386695e-01 9.06209525e-01 -2.51716786e-13 2.43831429e-14
 0.0000000e+001
===========
markers : [[5.35 8.85]]
T : [0.
               0.
                                 0.
                                           0.
                                                       0.94890511
                         0.
                    0.98265896 0.
                                        0.
                                                  0.
                                                           1
          1.
===========
| Interpolations |
_____
upwind: [0.
                                       0.
                                                 0.
                   0.
                             0.
                                                           0.
0.94890511 1.
                             0.98265896 0.
                    1.
                                                  0.
0.
         1
center: [0.
                   0.
                             0.
                                       0.
                                                 0.
                                                           0.47445255
0.97445255 1.
                    0.99132948 0.49132948 0.
                                                  0.
0.
center h : [0.
                    0.
                               0.
                                        0.
                                                   0.
                                                             0.
0.97378277 1.
                    0.99125364 0.
                                        0.
                                                  0.
0.
         1
                    Ο.
quick : [ 0.
                             0.
                                          0.
                                                     0.
0.09832136
 0.94890511 1.
                       1.
                                  0.94541478 -0.12283237 0.
 0.
weno: [0.0000000e+00 0.0000000e+00 0.0000000e+00 0.0000000e+00
-4.70246327e-14 1.55094076e-12 9.82987433e-01 1.00303620e+00
 9.94194728e-01 9.68206702e-01 -2.24802505e-13 2.19558186e-14
 0.0000000e+00]
============
markers : [[5.55 9.05]]
T : [0.
               0.
                        0.
                                   0.
                                           0.
                                                       0.89108911
                    1.
                              0.34482759 0.
                                                  0.
                                                           ]
          1.
| Interpolations |
_____
upwind: [0.
                   0.
                             0.
                                       0.
                                                 0.
                                                           0.
0.89108911 1.
                                       0.34482759 0.
                    1.
                              1.
0.
        1
center: [0.
                   0.
                                       0.
                                                 0.
                                                           0.44554455
                             0.
0.94554455 1.
                    1.
                              0.67241379 0.17241379 0.
0.
    1
center_h : [0.
                    0.
                               0.
                                         0.
                                                   0.
                                                             0.
0.94240838 1.
                    1.
                              0.51282051 0.
                                                  0.
0.
         1
quick : [ 0.
                    0.
                               0.
                                        0.
                                                     0.
```

```
0.17425065
 0.89108911 1.
                 1. 1. 0.1273076 -0.04310345
 0.
          1
weno : [5.08097757e-13 0.00000000e+00 0.0000000e+00 0.00000000e+00
-5.67845598e-14 1.91465558e-12 9.64165518e-01 1.00000000e+00
 1.00000000e+00 1.00000000e+00 1.16727283e-01 -5.74058317e-12
 5.08097757e-13]
markers : [[5.75 9.25]]
T : [O.
               0.
                         0.
                                   0.
                                             0.
                                                       0.76923077
1.
                              0.76923077 0.
                                                   0.
                                                            ]
           1.
                    1.
| Interpolations |
_____
                                      0.
upwind: [0.
                    0.
                             0.
                                                  0.
                                                            0.
0.76923077 1.
                    1.
                              1.
                                        0.76923077 0.
0.
         ]
center: [0.
                    0.
                              0.
                                        0.
                                                  0.
                                                            0.38461538
0.88461538 1.
                    1.
                              0.88461538 0.38461538 0.
0.
         1
center h : [0.
                     0.
                               0.
                                         0.
                                                   0.
                                                              0.
0.86956522 1.
                    1.
                              0.86956522 0.
                                                   0.
0.
         1
quick : [ 0.
                    0.
                               0.
                                      0.
                                                     0.
0.24342635
 0.76923077 1.
                                             0.50146178 -0.09615385
                       1.
                                 1.
 0.
          ]
weno: [4.57707173e-14 0.00000000e+00 0.0000000e+00 0.00000000e+00
-8.82720977e-14 3.20551431e-12 9.32630974e-01 1.00000000e+00
 1.00000000e+00 1.00000000e+00 5.34457796e-01 -5.08907643e-13
 4.57707173e-14]
===========
markers : [[5.95 9.45]]
T : [0.
               0.
                                             0.
                         0.
                                   0.
                                                       0.34482759
                    1.
                              0.89108911 0.
                                                   0.
                                                            ]
______
| Interpolations |
_____
upwind: [0.
                    0.
                             0.
                                      0.
                                                  0.
                                                            0.
0.34482759 1.
                                       0.89108911 0.
                    1.
                              1.
0.
         ]
center: [0.
                              0.
                                                            0.17241379
                    0.
                                        0.
                                                  0.
0.67241379 1.
                              0.94554455 0.44554455 0.
                    1.
center_h : [0.
                     0.
                               0.
                                         0.
                                                    0.
                                                              0.
0.51282051 1.
                    1.
                              0.94240838 0.
                                                   0.
```

```
0.
1
weno: [2.94438458e-14 0.00000000e+00 0.0000000e+00 0.00000000e+00
-9.79902817e-13 4.58286068e-11 6.26244898e-01 1.00000000e+00
 1.00000000e+00 9.9999999e-01 7.97500195e-01 -3.09237345e-13
 2.94438458e-14]
markers : [[6.15 9.65]]
                          0. 0.
                0.
T : [0. 0.
                                        0.
               1.
                      0.94890511 0.
                                     0.
                                             ]
0.98265896 1.
================
| Interpolations |
_____
upwind : [0. 0.
                     0. 0.
                                     0.
                                             0.
                    1. 0.94890511 0.
      0.98265896 1.
0.
0.
       1
center : [0.
                     0. 0.
           0.
                                             0.
0.49132948 0.99132948 1.
                    0.97445255 0.47445255 0.
0.
center_h : [0. 0.
                      0.
                              0.
                                     0.
                                              0.
       0.99125364 1.
                                   0.
                     0.97378277 0.
0.
       1
 quick : [ 0.
                                        0.
                               0.84881901 -0.11861314
 0.
       ]
weno: [2.43831429e-14 0.00000000e+00 0.0000000e+00 0.00000000e+00
 0.00000000e+00 -4.23433644e-14 1.38197729e-12 9.94219880e-01
 1.00292740e+00 9.93386695e-01 9.06209525e-01 -2.51716786e-13
 2.43831429e-14]
===========
markers : [[6.35 9.85]]
                   0.
                          0. 0.
T : [0. 0.
                  0.98265896 0.
                                   0.
0.94890511 1.
               1.
==============
| Interpolations |
_____
upwind: [0. 0.
                     0. 0. 0.
                                             0.
                            0.98265896 0.
       0.94890511 1.
0.
                     1.
0.
      ]
center : [0.
                     0. 0.
                                             0.
0.47445255 0.97445255 1.
                      0.99132948 0.49132948 0.
      ]
                     0.
center_h : [0. 0.
                               0.
                                      Ο.
                                              0.
0. 0.97378277 1.
                     0.99125364 0.
                                     0.
```

```
0. 0. 0.
                                   0.94541478 -0.12283237
     1
weno: [2.19558186e-14 0.00000000e+00 0.0000000e+00 0.00000000e+00
 0.00000000e+00 -4.70246327e-14 1.55094076e-12 9.82987433e-01
 1.00303620e+00 9.94194728e-01 9.68206702e-01 -2.24802505e-13
 2.19558186e-141
markers : [[ 6.55 10.05]]
T : [0. 0.
                 0.
                           0.
                                     0.
                        1.
0.89108911 1.
                 1.
                                0.34482759 0.
                                                 ]
============
| Interpolations |
_____
upwind : [0. 0.
                        0.
                                0.
                                       0.
                                1.
       0.89108911 1.
                                      0.34482759
0.
                       1.
0.
       1
center : [0.
            0.
                        0.
                               0. 0.
                                0.67241379 0.17241379
0.44554455 0.94554455 1.
                        1.
0.
center_h : [0. 0.
                         0.
                                 0.
                                          0.
       0.94240838 1.
                         1.
                                0.51282051 0.
0.
        1
                        0.
quick: [-0.04310345 0.
                                0.
                                            0.
                                  1.
0.17425065 0.89108911 1.
                        1.
                                              0.1273076
-0.04310345]
weno: [-5.74058317e-12 5.08097757e-13 0.00000000e+00 0.00000000e+00
 0.0000000e+00 -5.67845598e-14 1.91465558e-12 9.64165518e-01
 1.00000000e+00 1.00000000e+00 1.00000000e+00 1.16727283e-01
-5.74058317e-12]
===========
markers : [[ 6.75 10.25]]
                        0.
                    0.
T : [O.
            Ο.
                                     0.
0.76923077 1.
                        1. 0.76923077 0.
                 1.
===========
| Interpolations |
_____
upwind : [0. 0.
                        0.
                               0.
                                       0. 0.
       0.76923077 1.
0.
                        1.
                                1.
                                       0.76923077
0.
       ]
center : [0.
                               0. 0.
                        0.
0.38461538 0.88461538 1.
                         1.
                                0.88461538 0.38461538
       ]
center_h : [0. 0.
                        0.
                                 0.
                                          0.
                                                  0.
0. 0.86956522 1.
                         1.
                                 0.86956522 0.
```

```
quick: [-0.09615385 0. 0. 0. 0.24342635 0.76923077 1. 1.
                                   0.
1.
                                            0. 0.
                                                0.50146178
-0.09615385]
weno : [-5.08907643e-13 4.57707173e-14 0.00000000e+00 0.00000000e+00
 0.00000000e+00 -8.82720977e-14 3.20551431e-12 9.32630974e-01
 1.00000000e+00 1.00000000e+00 1.00000000e+00 5.34457796e-01
-5.08907643e-131
markers : [[ 6.95 10.45]]
T : [0. 0.
                  0.
                             0.
                                       0.
                 1.
                         1.
0.34482759 1.
                                 0.89108911 0.
                                                   ]
==============
| Interpolations |
_____
upwind: [0. 0.
                         0.
                                  0.
                                          0.
                                  1. 0.89108911
       0.34482759 1.
0.
                        1.
0.
        1
center : [0.
                                 0. 0.
              0.
                        0.
0.17241379 0.67241379 1.
                         1.
                                 0.94554455 0.44554455
0.
   ]
center_h : [0. 0.
                          0.
                                   0.
                                            0.
        0.51282051 1.
                          1.
                                 0.94240838 0.
0.
        1
quick: [-0.11138614 0.
                         0. 0.
                                              0.
                                   1.
 0.1331755 0.34482759 1.
                         1.
                                                0.70973936
-0.11138614]
weno: [-3.09237345e-13 2.94438458e-14 0.00000000e+00 0.00000000e+00
 0.0000000e+00 -9.79902817e-13 4.58286068e-11 6.26244898e-01
 1.00000000e+00 1.00000000e+00 9.9999999e-01 7.97500195e-01
-3.09237345e-131
===========
markers : [[ 7.15 10.65]]
                     0. 0. 0.
1. 0.94890511 0.
        0.
         0.98265896 1.
===========
| Interpolations |
============
upwind: [0.
              0. 0.
                                 0.
                                         0. 0.
                0.98265896 1.
                                         0.94890511
0.
        0.
                                 1.
0.
        ]
center: [0. 0. 0.
                                 0. 0.
        0.49132948 0.99132948 1.
                                  0.97445255 0.47445255
0.
       ]
center_h : [0. 0. 0.
                                   0.
                                            0.
                                                     0.
                                 0.97378277 0.
0.
       0.
               0.99125364 1.
```

```
    quick:
    [-0.11861314 0.
    0.
    0.
    0.
    0.
    0.

    0.
    0.03702638 0.98265896 1.
    1.
    1.
    0.84881901

 -0.118613147
weno: [-2.51716786e-13 2.43831429e-14 0.00000000e+00 0.00000000e+00
 0.00000000e+00 0.00000000e+00 -4.23433644e-14 1.38197729e-12
 9.94219880e-01 1.00292740e+00 9.93386695e-01 9.06209525e-01
-2.51716786e-13]
markers : [[ 7.35 10.85]]
                   0. 0.
T : [O. O.
                                          0. 0.
                        1.
                                    0.98265896 0.
          0.94890511 1.
                                                        1
| Interpolations |
upwind: [0. 0. 0.
                                    0. 0.
                0.94890511 1. 1. 0.98265896
        0.
0.
0.
         1
                                   0. 0.
center : [0. 0.
                      0.
                                   0.99132948 0.49132948
        0.47445255 0.97445255 1.
0.
center_h : [0.
                                    0.
                0. 0.
        0.
              0.97378277 1. 0.99125364 0.
0.
         1

    quick:
    [-0.12283237 0.
    0.
    0.
    0.

    0.
    0.09832136 0.94890511 1.
    1.

                                                 0.
                                                    0.94541478
-0.12283237]
weno: [-2.24802505e-13 2.19558186e-14 0.00000000e+00 0.00000000e+00
 0.00000000e+00 0.00000000e+00 -4.70246327e-14 1.55094076e-12
 9.82987433e-01 1.00303620e+00 9.94194728e-01 9.68206702e-01
-2.24802505e-13]
==============
markers : [[ 7.55 11.05]]
                      0. 0. 0. 0. 0.
1. 1. 0.34482759]
T : [O. O.
          0.89108911 1.
===============
| Interpolations |
_____
upwind: [0.34482759 0. 0.
                                    0.
                                             0. 0.
0. 0.89108911 1.
                                     1.
                                              1.
0.34482759]
center: [0.17241379 0. 0.
                                             0. 0.
                                   0.
 0. 0.44554455 0.94554455 1.
                                     1.
                                              0.67241379
0.17241379]
center_h : [0. 0. 0. 0. 0. 0. 0. 0. 0. 94240838 1.
                                     0.
                                                    0.
                                              0.
                                     1.
                                              0.51282051
```

```
0. 1
quick: [ 0.1273076 -0.04310345 0. 0. 0. 17425065 0.89108911 1. 1.
                                             0.
                                                       0.
 0.1273076 ]
weno: [1.16727283e-01-5.74058317e-12 5.08097757e-13 0.00000000e+00
 0.0000000e+00 0.0000000e+00 -5.67845598e-14 1.91465558e-12
 9.64165518e-01 1.00000000e+00 1.00000000e+00 1.00000000e+00
 1.16727283e-01]
markers : [[ 7.75 11.25]]
                                   0.
T : [0.
             0.
                      0.
                           0.
                                                0.
                         1.
                                   1.
0.
         0.76923077 1.
                                           0.76923077]
===============
| Interpolations |
upwind: [0.76923077 0.
                         0.
                                   0.
                                           0.
                                                    0.
        0. 0.76923077 1.
0.
                                1.
                                           1.
0.76923077]
center: [0.38461538 0.
                      0.
                                 0.
                                           0.
        0.38461538 0.88461538 1.
                                 1.
                                           0.88461538
0.38461538]
center h : [0.
                                   0.
                 0.
                          0.
                                            0.
        0.
             0.86956522 1.
                                    1.
                                           0.86956522
0.
        1
quick: [ 0.50146178 -0.09615385 0. 0.
                                               0.
                                                        0.
     0.24342635 0.76923077 1.
                                    1.
                                                 1.
 0.50146178]
weno : [5.34457796e-01 -5.08907643e-13 4.57707173e-14 0.00000000e+00
 0.0000000e+00 0.0000000e+00 -8.82720977e-14 3.20551431e-12
 9.32630974e-01 1.00000000e+00 1.00000000e+00 1.00000000e+00
 5.34457796e-01]
===========
markers : [[ 7.95 11.45]]
                      0. 0.
                                   0.
T : [0.
             Ο.
                                                0.
                      1.
         0.34482759 1.
                                  1.
                                           0.89108911]
==============
| Interpolations |
==============
upwind: [0.89108911 0. 0.
                                  0.
                                           0.
                                                    0.
0.
        0. 0.34482759 1.
                                   1.
                                           1.
0.89108911]
center: [0.44554455 0. 0.
                                          0.
                                 0.
        0.17241379 0.67241379 1.
                                   1.
                                            0.94554455
0.44554455]
                 0. 0.
                                   0.
center_h : [0.
                                             0.
                                                      0.
0.
        0.
                0.51282051 1.
                                   1.
                                           0.94240838
```

```
0. 1

    quick:
    [ 0.70973936 -0.11138614 0.
    0.

    0.
    0.1331755 0.34482759 1.
    1.

                                               0.
                                                          0.
 0.709739361
weno : [7.97500195e-01 -3.09237345e-13 2.94438458e-14 0.00000000e+00
 0.00000000e+00 0.00000000e+00 -9.79902817e-13 4.58286068e-11
 6.26244898e-01 1.00000000e+00 1.00000000e+00 9.9999999e-01
 7.97500195e-011
markers : [[ 8.15 11.65]]
T : [0. 0.
                            0.
                                     0.
                       0.
                                                  0.
                   0.98265896 1.
0.
                                    1.
         0.
                                             0.94890511]
============
| Interpolations |
upwind: [0.94890511 0.
                          0.
                                    0.
                                             0.
                                                       0.
                0. 0.98265896 1.
        0.
0.
                                             1.
0.94890511]
center: [0.47445255 0. 0.
                                   0.
                                             0.
        0.
                 0.49132948 0.99132948 1.
                                             0.97445255
0.47445255]
                  0.
center h : [0.
                           0.
                                     0.
                                              0.
        0.
                   0.
                          0.99125364 1.
                                             0.97378277
0.
         7
quick: [ 0.84881901 -0.11861314 0.
                                                 0.
                                      0.
                                                           0.
                0.03702638 0.98265896 1.
      0.
                                                   1.
 0.84881901]
weno: [9.06209525e-01-2.51716786e-13 2.43831429e-14 0.00000000e+00
 0.0000000e+00 0.0000000e+00 0.0000000e+00 -4.23433644e-14
 1.38197729e-12 9.94219880e-01 1.00292740e+00 9.93386695e-01
 9.06209525e-011
===========
markers : [[ 8.35 11.85]]
                   0. 0.
                                     0.
T : [0.
             0.
                                                  0.
                                1.
                   0.94890511 1.
                                            0.98265896]
          0.
===============
| Interpolations |
==============
                       0. 0.
upwind: [0.98265896 0.
                                             0.
                                                       0.
                         0.94890511 1.
         0.
0.
                  0.
                                             1.
0.98265896]
center: [0.49132948 0. 0.
                                            0.
                                    0.
                  0.47445255 0.97445255 1.
                                             0.99132948
0.49132948]
                  0.
                          0.
center_h : [0.
                                      0.
                                              0.
                                                        0.
0.
        0.
                  0.
                       0.97378277 1.
                                             0.99125364
```

```
quick: [ 0.94541478 -0.12283237 0. 0.
                                            0.
                                                     0.
                  0.09832136 0.94890511 1.
 0.
         0.
 0.945414787
weno: [9.68206702e-01 -2.24802505e-13 2.19558186e-14 0.00000000e+00
 0.00000000e+00 0.00000000e+00 0.00000000e+00 -4.70246327e-14
 1.55094076e-12 9.82987433e-01 1.00303620e+00 9.94194728e-01
 9.68206702e-011
markers : [[8.55 0.05]]
                     0. 0.
                                  0.
T: [0.34482759 0.
                                             0.
                 0.89108911 1.
                                 1.
                                          1.
0. 0.
                                                   ]
| Interpolations |
_____
upwind: [1. 0.34482759 0.
                                0.
                                          0.
                                                   0.
       0.
                0. 0.89108911 1.
0.
                                         1.
1.
        1
center: [0.67241379 0.17241379 0.
                             0.
                                         0.
                                                   0.
                0.44554455 0.94554455 1.
       0.
                                         1.
0.67241379]
center_h : [0.51282051 0.
                      0.
                                  0.
                                          0.
                     0.94240838 1.
    0.
                0.
                                           1.
0.51282051]
quick : [ 1.
              0.1273076 -0.04310345 0. 0.
                                                      0.
     0.
                 0.17425065 0.89108911 1.
                                               1.
 1.
         ]
weno: [1.00000000e+00 1.16727283e-01 -5.74058317e-12 5.08097757e-13
 0.0000000e+00 0.0000000e+00 0.0000000e+00 -5.67845598e-14
 1.91465558e-12 9.64165518e-01 1.00000000e+00 1.00000000e+00
 1.00000000e+001
===========
markers : [[8.75 0.25]]
                     0. 0.
                                  0.
T: [0.76923077 0.
         0.
                 0.76923077 1.
                                 1.
                                          1.
| Interpolations |
==============
upwind: [1. 0.76923077 0. 0.
                                         0.
                                                   0.
0.
                0. 0.76923077 1.
       0.
                                          1.
        1
center: [0.88461538 0.38461538 0.
                                         0.
                                                   0.
            0.38461538 0.88461538 1.
0.
       0.
                                           1.
0.88461538]
center_h : [0.86956522 0. 0.
                                   0.
                                          0.
                                                    0.
0. 0. 0.
                     0.86956522 1.
                                           1.
```

```
0.869565221

    quick:
    [ 1.

    0.
    0.50146178 -0.09615385 0.

    0.
    0.24342635 0.76923077 1.

                                               0.
                                                         0.
                                                  1.
 1.
         7
weno: [1.00000000e+00 5.34457796e-01 -5.08907643e-13 4.57707173e-14
 0.0000000e+00 0.0000000e+00 0.0000000e+00 -8.82720977e-14
 3.20551431e-12 9.32630974e-01 1.00000000e+00 1.00000000e+00
 1.0000000e+001
markers : [[8.95 0.45]]
                    0. 0.
T: [0.89108911 0.
                                    0.
                                                 0.
                                    1.
                                              1.
0. 0.
                   0.34482759 1.
                                                      ]
| Interpolations |
_____
upwind: [1. 0.89108911 0.
                                    0.
                                             0.
                                                      0.
        0.
                  0. 0.34482759 1.
0.
                                            1.
1.
        1
center: [0.94554455 0.44554455 0.
                               0.
                                            0.
                                                      0.
                 0.17241379 0.67241379 1.
        0.
                                            1.
0.94554455]
center h : [0.94240838 0.
                           0.
                                             0.
                       0.51282051 1.
         Ο.
                  0.
                                              1.
0.942408381
quick : [ 1.
                0.70973936 -0.11138614 0.
                                              0.
                                                          0.
 0. 0.
                  0.1331755 0.34482759 1.
                                                   1.
 1.
         ]
weno: [9.9999999e-01 7.97500195e-01 -3.09237345e-13 2.94438458e-14
 0.0000000e+00 0.0000000e+00 0.0000000e+00 -9.79902817e-13
 4.58286068e-11 6.26244898e-01 1.00000000e+00 1.00000000e+00
 9.9999999e-01l
===========
markers : [[9.15 0.65]]
                                   0.
                  0. 0.
0. 0.98265896 1.
T: [0.94890511 0.
                                                 0.
                                            1.
         0.
                                                      1
==============
| Interpolations |
==============
upwind: [1. 0.94890511 0. 0.
                                                      0.
                                  0.98265896 1.
0.
                  0. 0.
        0.
        1
center: [0.97445255 0.47445255 0. 0.
                                                      0.
               0. 0.49132948 0.99132948 1.
0.
        0.
0.97445255]
                           0.
center_h : [0.97378277 0.
                                     0.
                                               0.
                                                        0.
0. 0. 0.
                           0.
                                0.99125364 1.
```

```
0.973782771
           0.84881901 -0.11861314 0. 0.
quick : [ 1.
                                                    0.
        0.
                            0.03702638 0.98265896 1.
 0.
                  0.
 1.
        7
weno: [9.93386695e-01 9.06209525e-01 -2.51716786e-13 2.43831429e-14
 0.0000000e+00 0.0000000e+00 0.0000000e+00 0.0000000e+00
-4.23433644e-14 1.38197729e-12 9.94219880e-01 1.00292740e+00
 9.93386695e-011
markers : [[9.35 0.85]]
                                0.
T: [0.98265896 0.
                 0.
                             0.
                                            0.
                 0.
                        0.94890511 1.
                                         1.
0. 0.
                                                  ]
==============
| Interpolations |
_____
upwind: [1. 0.98265896 0. 0.
                                        0.
                                                  0.
                0. 0. 0.94890511 1.
       0.
0.
1.
       1
                            0.
center: [0.99132948 0.49132948 0.
                                                  0.
                0. 0.47445255 0.97445255 1.
       0.
0.99132948]
center_h : [0.99125364 0.
                        0.
                                 0.
   0.
                0.
                        0.
                                0.97378277 1.
0.991253647
               0.94541478 -0.12283237 0.
quick : [ 1.
                                                     0.
                0.
                       0.09832136 0.94890511 1.
 0. 0.
 1.
        ]
weno: [9.94194728e-01 9.68206702e-01 -2.24802505e-13 2.19558186e-14
 0.0000000e+00 0.0000000e+00 0.0000000e+00 0.0000000e+00
-4.70246327e-14 1.55094076e-12 9.82987433e-01 1.00303620e+00
 9.94194728e-01]
===========
markers : [[9.55 1.05]]
           1.
        0.
===========
| Interpolations |
_____
               1. 0.34482759 0. 0.
upwind: [1.
                                                  0.
                      0. 0.89108911 1.
0.
                0.
       0.
1.
       1
               0.67241379 0.17241379 0. 0.
center : [1.
                                                  0.
                0. 0.44554455 0.94554455 1.
0.
       0.
        ]
center_h : [1.
               0.51282051 0.
                                 0.
                                           0.
                                                   0.
0.
       0.
                0. 0.
                             0.94240838 1.
```

```
quick : [ 1.
                1. 0.1273076 -0.04310345 0.
0. 0.17425065 0.89108911 1.
                                                      0.
         0.
 0.
 1.
         7
weno : [ 1.00000000e+00 1.00000000e+00 1.16727283e-01 -5.74058317e-12
 5.08097757e-13 0.00000000e+00 0.0000000e+00 0.0000000e+00
-5.67845598e-14 1.91465558e-12 9.64165518e-01 1.00000000e+00
 1.0000000e+001
markers : [[9.75 1.25]]
T: [1. 0.76923077 0.
                              0. 0.
                                              0.
0.
                 0. 0.76923077 1.
                                          1.
                                                   ]
         0.
==============
| Interpolations |
_____
upwind: [1.
                1. 0.76923077 0.
                                          0.
                                                   0.
        0.
                0.
                        0. 0.76923077 1.
0.
1.
        1
               0.88461538 0.38461538 0.
center : [1.
                                                   0.
0.
                0.
                         0.38461538 0.88461538 1.
        0.
1.
                 0.86956522 0.
center h : [1.
                                  0.
        0.
                 0. 0.
                              0.86956522 1.
0.
1.
        1
                 1. 0.50146178 -0.09615385 0.
quick : [ 1.
                                                       0.
                 0.
                            0.24342635 0.76923077 1.
 0.
      0.
 1.
         ]
weno: [1.00000000e+00 1.00000000e+00 5.34457796e-01 -5.08907643e-13
 4.57707173e-14 0.00000000e+00 0.0000000e+00 0.0000000e+00
-8.82720977e-14 3.20551431e-12 9.32630974e-01 1.00000000e+00
 1.00000000e+001
===========
markers : [[9.95 1.45]]
            0.
                                          1.
                                                   1
         0.
===========
| Interpolations |
_____
                1. 0.89108911 0. 0.
upwind: [1.
                                                   0.
                       0. 0.34482759 1.
0.
                0.
        0.
1.
        ]
               0.94554455 0.44554455 0. 0.
center : [1.
                                                   0.
                 0. 0.17241379 0.67241379 1.
0.
        0.
        ]
                0.94240838 0.
center_h : [1.
                                  0.
                                            0.
                                                     0.
0.
        0.
                0. 0.
                              0.51282051 1.
```

```
quick: [1.
               1. 0.70973936 -0.11138614 0. 0. 1331755 0.34482759 1.
                                                 0.
        0.
 0.
 1.
        ٦
weno : [ 1.00000000e+00 9.9999999e-01 7.97500195e-01 -3.09237345e-13
 2.94438458e-14 0.00000000e+00 0.0000000e+00 0.0000000e+00
-9.79902817e-13 4.58286068e-11 6.26244898e-01 1.00000000e+00
 1.0000000e+001
markers : [[10.15 1.65]]
T: [1. 0.94890511 0. 0.
                                   0.
                                       0.
                   0.
0.
                              0.98265896 1.
                0.
                                               ]
        0.
==============
| Interpolations |
_____
upwind: [1.
              1. 0.94890511 0. 0.
                                    0.98265896
                     0. 0.
       0.
               0.
0.
1.
       1
center : [1.
              0.97445255 0.47445255 0. 0.
                       0. 0.49132948 0.99132948
0.
       0.
               0.
1.
               0.97378277 0. 0.
center h : [1.
       0.
                0. 0.
                               0.
0.
                                       0.99125364
1.
       1
               1. 0.84881901 -0.11861314 0.
quick : [ 1.
                0.
                        0.
                                   0.03702638 0.98265896
 0.
     0.
 1.
        ]
weno: [1.00292740e+00 9.93386695e-01 9.06209525e-01 -2.51716786e-13
 2.43831429e-14 0.00000000e+00 0.0000000e+00 0.0000000e+00
 0.00000000e+00 -4.23433644e-14 1.38197729e-12 9.94219880e-01
 1.00292740e+001
===========
markers : [[10.35 1.85]]
0. 0.
===========
| Interpolations |
_____
              1. 0.98265896 0.
upwind: [1.
                                      0. 0.
                     0. 0.
0.
               0.
                                      0.94890511
       0.
1.
       1
              0.99132948 0.49132948 0. 0. 0.
center : [1.
               0. 0.47445255 0.97445255
0.
       0.
       ]
                                0.
               0.99125364 0.
center_h : [1.
                                       0. 0.
0.
       0.
               0. 0.
                              0. 0.97378277
```

```
1. 0.94541478 -0.12283237 0. 0. 0. 0. 0.09832136 0.94890511
quick : [ 1.
         0.
 0.
 1.
         7
weno: [1.00303620e+00 9.94194728e-01 9.68206702e-01 -2.24802505e-13
 2.19558186e-14 0.00000000e+00 0.0000000e+00 0.00000000e+00
 0.00000000e+00 -4.70246327e-14 1.55094076e-12 9.82987433e-01
 1.00303620e+001
markers : [[10.55 2.05]]
                                      0. 0.
T: [1. 1.
                  0.34482759 0.
0.
                 0.
                                 0.89108911 1.
                      0.
                                                   ]
         0.
==============
| Interpolations |
upwind: [1.
                1.
                        1.
                                0.34482759 0.
                 0.
                         0.
                                 0. 0.89108911
0.
       0.
1.
        1
                        0.67241379 0.17241379 0.
center : Γ1.
                1.
                                 0.44554455 0.94554455
0.
                         0.
       0.
                0.
1.
                          0.51282051 0.
center_h : [1.
                 1.
       0.
                                        0.94240838
0.
                 0.
                          0. 0.
1.
        1
                          1. 0.1273076 -0.04310345 0.
quick : [ 1.
                 1.
                            0.
                                     0.17425065 0.89108911
 0.
      0.
                  0.
 1.
         ]
weno: [1.00000000e+00 1.00000000e+00 1.00000000e+00 1.16727283e-01
-5.74058317e-12 5.08097757e-13 0.0000000e+00 0.0000000e+00
 0.00000000e+00 -5.67845598e-14 1.91465558e-12 9.64165518e-01
 1.0000000e+001
===========
markers : [[10.75 2.25]]
                     0.76923077 0. 0. 0.
            1.
                 0.
                       0. 0.76923077 1.
         0.
===========
| Interpolations |
_____
                        1.
upwind: [1.
                                0.76923077 0. 0.
                 1.
0.
                        0.
                                0. 0.76923077
        0.
                 0.
1.
        ]
                       0.88461538 0.38461538 0. 0.
center: [1.
                 1.
                 0.
                         0. 0.38461538 0.88461538
0.
        0.
        ]
                         0.86956522 0.
                                               0.
center_h : [1.
                 1.
                                           0.
0.
       0.
                 0.
                         0.
                             0.
                                      0.86956522
```

```
1. 0.50146178 -0.09615385 0. 0. 24342635 0.76923077
                 1.
0.
quick : [ 1.
         0.
 0.
 1.
         1
weno: [1.00000000e+00 1.0000000e+00 1.00000000e+00 5.34457796e-01
-5.08907643e-13 4.57707173e-14 0.0000000e+00 0.0000000e+00
 0.00000000e+00 -8.82720977e-14 3.20551431e-12 9.32630974e-01
 1.0000000e+001
markers : [[10.95 2.45]]
                                   0. 0.
T: [1. 1.
                  0.89108911 0.
                  0.
                                  0.34482759 1.
0.
                         0.
                                                    ]
         0.
==============
| Interpolations |
_____
upwind: [1.
                 1.
                         1. 0.89108911 0.
                 0.
                         0.
                                  0.
                                           0.34482759
0.
        0.
1.
        1
                         0.94554455 0.44554455 0.
center : [1.
                 1.
0.
                         0.
                                   0.17241379 0.67241379
        0.
                 0.
1.
                          0.94240838 0.
center h : [1.
                 1.
        0.
0.
                  0.
                           0. 0.
                                         0.51282051
1.
        1
quick : [ 1.
                          1. 0.70973936 -0.11138614 0.
                  1.
                             0.
                                       0.1331755 0.34482759
 0.
      0.
                  0.
 1.
         ]
weno: [1.00000000e+00 1.00000000e+00 9.9999999e-01 7.97500195e-01
-3.09237345e-13 2.94438458e-14 0.0000000e+00 0.0000000e+00
 0.00000000e+00 -9.79902817e-13 4.58286068e-11 6.26244898e-01
 1.0000000e+001
===========
markers : [[11.15 2.65]]
                      0.94890511 0. 0.
T: [1.
             1.
                                                0.
                             0. 0.98265896]
                  0.
                       0.
         0.
===========
| Interpolations |
_____
                        1.
upwind: [0.98265896 1.
                                 0.94890511 0.
                                                   0.
0.
         0.
                         0.
                                 0.
                  0.
                                           0.
0.98265896]
center: [0.99132948 1.
                        0.97445255 0.47445255 0.
         Ο.
                          0. 0.
                                           0.49132948
0.
                0.
0.99132948]
                        0.97378277 0.
center_h : [0.99125364 1.
                                             0.
                                                      0.
0.
      0. 0.
                         0.
                              0.
                                            0.
```

```
0.99125364]

    quick:
    [ 0.98265896 1.
    1.
    0.84881901 -0.11861314 0.

    0.
    0.
    0.
    0.03702638

 0.982658961
weno: [9.94219880e-01 1.00292740e+00 9.93386695e-01 9.06209525e-01
-2.51716786e-13 2.43831429e-14 0.00000000e+00 0.00000000e+00
 0.00000000e+00 0.00000000e+00 -4.23433644e-14 1.38197729e-12
 9.94219880e-011
markers : [[11.35 2.85]]
                                     0.
T: [1. 1.
                      0.98265896 0.
                                                   0.
0.
                                    0.
                   0.
                           0.
          0.
                                              0.94890511]
============
| Interpolations |
upwind: [0.94890511 1.
                          1.
                                     0.98265896 0.
                                                       0.
        0.
                           0.
                                     0.
0.
                  0.
                                              0.
0.94890511]
center: [0.97445255 1.
                         0.99132948 0.49132948 0.
        0.
                           0.
                                     0.
                  0.
                                           0.47445255
0.97445255]
                                             0.
center h : [0.97378277 1.
                           0.99125364 0.
    0.
                  0.
                            0. 0.
                                               0.
0.973782771
                            1. 0.94541478 -0.12283237 0.
quick: [ 0.94890511 1.
     0.
                0.
                              0.
                                         0.
                                                    0.09832136
 0.94890511]
weno: [9.82987433e-01 1.00303620e+00 9.94194728e-01 9.68206702e-01
-2.24802505e-13 2.19558186e-14 0.0000000e+00 0.0000000e+00
 0.0000000e+00 0.0000000e+00 -4.70246327e-14 1.55094076e-12
 9.82987433e-011
==============
markers : [[11.55 3.05]]
                  1. 0.34482759 0.
T: [1.
                                                   0.
                           0.
                   0.
                                     0.
          0.
                                             0.89108911]
===========
| Interpolations |
_____
upwind: [0.89108911 1.
                          1.
                                   1.
                                            0.34482759 0.
         0.
                           0.
0.
                   0.
                                    0.
                                               0.
0.89108911]
center: [0.94554455 1.
                                   0.67241379 0.17241379 0.
                          1.
        0.
                            0.
                                     0.
                                             0.44554455
0.
                  0.
0.94554455]
center_h : [0.94240838 1.
                            1.
                                     0.51282051 0.
                                                     0.
0.
        0.
               0.
                            0.
                                     0.
                                               0.
```

```
0.94240838]
quick: [ 0.89108911 1. 1. 1.
                                            0.1273076
-0.04310345
 0.
         0.
               0. 0. 0.
                                                0.17425065
 0.891089117
weno : [ 9.64165518e-01 1.00000000e+00 1.00000000e+00 1.00000000e+00
 1.16727283e-01 -5.74058317e-12 5.08097757e-13 0.00000000e+00
 0.0000000e+00 0.0000000e+00 -5.67845598e-14 1.91465558e-12
 9.64165518e-01]
==============
markers : [[11.75 3.25]]
                    1.
                         0.76923077 0.
T: [1.
        1.
                         0.
                                  0.
                                         0.76923077]
0.
                  0.
         0.
=============
| Interpolations |
==============
                                 1.
upwind: [0.76923077 1.
                        1.
                                          0.76923077 0.
0. 0.
               0.
                         0.
                                 0.
                                           0.
0.769230771
center: [0.88461538 1.
                                 0.88461538 0.38461538 0.
                        1.
0.
         0.
                 0.
                         0.
                                  0.
                                           0.38461538
0.884615387
                          1.
center_h : [0.86956522 1.
                                  0.86956522 0.
                                                    0.
0.
         0.
                 0.
                          0.
                                  0.
                                      0.
0.86956522]
quick: [ 0.76923077 1.
                      1.
                                  1. 0.50146178
-0.09615385
               0. 0. 0.
 0.
       0.
                                                0.24342635
 0.76923077]
weno: [9.32630974e-01 1.00000000e+00 1.00000000e+00 1.00000000e+00
 5.34457796e-01 -5.08907643e-13 4.57707173e-14 0.00000000e+00
 0.0000000e+00 0.00000000e+00 -8.82720977e-14 3.20551431e-12
 9.32630974e-01]
______
markers : [[11.95 3.45]]
                     1.
                          0.89108911 0.
         1.
                                        0.34482759]
                         0.
         0.
                 0.
                              0.
| Interpolations |
===========
upwind: [0.34482759 1.
                        1.
                                 1.
                                           0.89108911 0.
0. 0.
             0.
                         0.
                                 0.
                                           0.
0.34482759]
                               0.94554455 0.44554455 0.
                       1.
center: [0.67241379 1.
0.
         0.
                 0.
                         0.
                                  0.
                                           0.17241379
0.67241379]
```

```
1.
center_h : [0.51282051 1.
                                     0.94240838 0.
                                                     0.
                            0.
                                     0.
                                               0.
0.
         0.
                   0.
0.51282051]
quick: [ 0.34482759 1.
                         1.
                                   1.
                                                 0.70973936
-0.11138614
                   0. 0.
 0.
           0.
                                        0.
                                                    0.1331755
 0.344827591
weno: [6.26244898e-01 1.00000000e+00 1.00000000e+00 9.9999999e-01
 7.97500195e-01 -3.09237345e-13 2.94438458e-14 0.00000000e+00
 0.00000000e+00 0.00000000e+00 -9.79902817e-13 4.58286068e-11
 6.26244898e-01]
_____
markers : [[0.15 3.65]]
T: [0.98265896 1.
                      1.
                                0.94890511 0.
                                                  0.
0.
         0.
                   0.
                            0.
                                      0.
                                               0.
                                                       1
===========
| Interpolations |
==============
upwind: [0.
                  0.98265896 1.
                                    1.
                                              0.94890511 0.
0.
        0.
                  0.
                           0.
                                    0.
                                               0.
0.
center: [0.49132948 0.99132948 1.
                                     0.97445255 0.47445255 0.
        0.
                   0.
                            0.
                                     0.
                                               0.
0.491329487
center_h : [0.
                  0.99125364 1.
                                     0.97378277 0.
        0.
                                     0.
                  0.
                            0.
                                              0.
0.
         ]
quick: [ 0.03702638 0.98265896 1.
                                   1.
                                                 0.84881901
-0.11861314
                     0. 0.
 0.
           0.
                                          0.
 0.037026381
weno: [1.38197729e-12 9.94219880e-01 1.00292740e+00 9.93386695e-01
 9.06209525e-01 -2.51716786e-13 2.43831429e-14 0.00000000e+00
 0.00000000e+00 0.00000000e+00 0.00000000e+00 -4.23433644e-14
 1.38197729e-12l
===========
markers : [[0.35 3.85]]
T: [0.94890511 1.
                                0.98265896 0.
                      1.
                                                  0.
                            0.
         0.
                   0.
                                      0.
                                               0.
                                                       1
==============
| Interpolations |
_____
upwind: [0.
                0.94890511 1.
                                    1.
                                              0.98265896 0.
0.
        0.
                  0.
                           0.
                                    0.
0.
         1
center: [0.47445255 0.97445255 1.
                               0.99132948 0.49132948 0.
```

```
0. 0.
             0. 0. 0. 0.
0.47445255]
center_h : [0.
                 0.97378277 1.
                                   0.99125364 0.
                                                 0.
                               0.
0.
       0.
                 0.
                      0.
                                            0.
0.
        1
quick: [ 0.09832136  0.94890511  1.
                                   1.
                                             0.94541478
-0.12283237
 0.
                    0.
           0.
                             0.
                                       0.
                                                 0.
 0.09832136]
weno: [1.55094076e-12 9.82987433e-01 1.00303620e+00 9.94194728e-01
 9.68206702e-01 -2.24802505e-13 2.19558186e-14 0.00000000e+00
 0.00000000e+00 0.00000000e+00 0.0000000e+00 -4.70246327e-14
 1.55094076e-12]
_____
markers : [[0.55 4.05]]
                                      0.34482759 0.
T: [0.89108911 1.
                     1.
                            1.
                       0.
                               0.
                  0.
                                            0.
                                                    1
0.
         0.
============
| Interpolations |
============
upwind: [0.
                 0.89108911 1.
                                   1.
                                           1. 0.34482759
0.
       0.
                 0.
                      0.
                                  0.
                                           0.
        1
0.
                                 1.
center: [0.44554455 0.94554455 1.
                                          0.67241379 0.17241379
0.
                  0.
                           0.
                                  0.
                                            0.
        0.
0.44554455]
center_h : [0.
                 0.94240838 1.
                                   1.
                                            0.51282051 0.
0.
        0.
                          0.
                                   0.
                                           0.
                  0.
0.
       ]
quick: [ 0.17425065 0.89108911 1.
                 0. 0.
                                            1.
                                                        0.1273076
                                   1.
-0.04310345 0.
                                    0.
                                                 0.
 0.17425065]
weno: [1.91465558e-12 9.64165518e-01 1.00000000e+00 1.00000000e+00
 1.00000000e+00 1.16727283e-01 -5.74058317e-12 5.08097757e-13
 0.0000000e+00 0.0000000e+00 0.0000000e+00 -5.67845598e-14
 1.91465558e-12]
============
markers : [[0.75 4.25]]
                           1.
                                   0.76923077 0.
T: [0.76923077 1.
                     1.
                         0.
                  0.
                                 0.
                                            0.
0.
         0.
                                                    ]
=============
| Interpolations |
_____
upwind: [0.
                 0.76923077 1.
                                 1.
                                           1.
                                                   0.76923077
0.
        0.
                  0.
                      0.
                                  0.
                                           0.
```

0.

1

```
center: [0.38461538 0.88461538 1. 1. 0.88461538 0.38461538
                    0.
                                0.
0.
        0.
            0.
                                         0.
0.38461538]
center_h : [0.
                0.86956522 1.
                                1.
                                        0.86956522 0.
                    0.
                                0.
0. 0.
                0.
                                         0.
       1
quick: [ 0.24342635 0.76923077 1.
                              1.
0.50146178
-0.09615385 0.
             0. 0. 0.
 0.243426351
weno : [ 3.20551431e-12 9.32630974e-01 1.00000000e+00 1.00000000e+00
 1.00000000e+00 5.34457796e-01 -5.08907643e-13 4.57707173e-14
 0.00000000e+00 0.00000000e+00 0.00000000e+00 -8.82720977e-14
 3.20551431e-12]
_____
markers : [[0.95 4.45]]
                   1.
                        1.
                                0.89108911 0.
T: [0.34482759 1.
0. 0.
                       0.
                0.
                           0.
                                         0.
                                                ]
_____
| Interpolations |
==============
upwind: [0.
              0.34482759 1.
                               1.
                                       1. 0.89108911
0.
       0.
                0.
                     0.
                                0.
                                        0.
0.
       1
center: [0.17241379 0.67241379 1.
                                      0.94554455 0.44554455
                              1.
               Ο.
                                0.
       0.
                       0.
                                        Ο.
0.17241379]
center_h : [0.
                0.51282051 1.
                                1.
                                        0.94240838 0.
0. 0.
                0. 0.
                                 0.
                                        0.
       1
0.
1.
0.70973936
-0.11138614 0. 0. 0.
                                             0.
 0.1331755 ]
weno : [ 4.58286068e-11 6.26244898e-01 1.00000000e+00 1.00000000e+00
 9.9999999e-01 7.97500195e-01 -3.09237345e-13 2.94438458e-14
 0.0000000e+00 0.0000000e+00 0.0000000e+00 -9.79902817e-13
 4.58286068e-11]
_____
markers : [[1.15 4.65]]
            0.98265896 1.
T : [0.
                        1.
                                0.94890511 0.
                       0. 0.
0.
                0.
                                         0.
                                                ]
        0.
===========
| Interpolations |
============
upwind: [0.
              0. 0.98265896 1. 1. 0.94890511
```

```
0.
   0.
               0. 0. 0. 0.
0.
        7
                                            0.97445255 0.47445255
                  0.49132948 0.99132948 1.
center: [0.
0.
        0.
                  Ο.
                           0.
                                 0.
                                             0.
0.
        1
                  0.
center_h : [0.
                           0.99125364 1.
                                             0.97378277 0.
0.
         0.
                  0.
                           0.
                                     0.
                                            0.
0.
quick : [ 0.
                  0.03702638 0.98265896 1.
0.84881901
-0.11861314 0.
                     0.
                               0.
                                         0.
                                                   0.
weno: [-4.23433644e-14 1.38197729e-12 9.94219880e-01 1.00292740e+00
 9.93386695e-01 9.06209525e-01 -2.51716786e-13 2.43831429e-14
 0.0000000e+00 0.0000000e+00 0.0000000e+00 0.0000000e+00
-4.23433644e-14]
_____
markers : [[1.35 4.85]]
             0.94890511 1.
                           1.
Τ : [O.
                                     0.98265896 0.
                                 0.
                        0.
                  0.
                                              0.
         0.
                                                      1
| Interpolations |
_____
upwind: [0.
                  0.
                           0.94890511 1.
                                            1.
                                                 0.98265896
0.
        0.
                  Ο.
                          0.
                                    0.
                                             0.
        1
0.
                  0.47445255 0.97445255 1.
center: [0.
                                           0.99132948 0.49132948
0.
                           0.
                                0.
        0.
                  0.
                                             0.
0.
        ]
center_h : [0.
                  0.
                           0.97378277 1.
                                             0.99125364 0.
0.
         0.
                  0.
                           0.
                                    0.
                                            0.
        ]
0.
                 0.09832136 0.94890511 1.
quick : [ 0.
                                               1.
0.94541478
-0.12283237 0.
                     0.
                               0.
                                         0.
                                                   0.
 0.
         1
weno: [-4.70246327e-14 1.55094076e-12 9.82987433e-01 1.00303620e+00
 9.94194728e-01 9.68206702e-01 -2.24802505e-13 2.19558186e-14
 0.0000000e+00 0.0000000e+00 0.0000000e+00 0.0000000e+00
-4.70246327e-14]
_____
markers : [[1.55 5.05]]
         0.89108911 1. 1.
                                                0.34482759
                                       1.
                        0.
                                  0.
                                            0.
                  0.
                                                      ]
| Interpolations |
```

```
0. 0.89108911 1. 1.
upwind: [0.
                                                 1.
                0.
                                 0.
0.34482759 0.
                        0.
                                         0.
0.
       1
                                       1. 0.67241379
              0.44554455 0.94554455 1.
center: [0.
0.17241379 0.
                0.
                        0. 0.
                                         0.
0. ]
                                        1. 0.51282051
               0. 0.94240838 1.
center h : [0.
0. 0.
                0.
                        0. 0.
                                         0.
0.
        1

    quick:
    [ 0.
    0.17425065
    0.89108911
    1.

    0.1273076
    -0.04310345
    0.
    0.
    0.

                                                     1.
 0.
weno: [-5.67845598e-14 1.91465558e-12 9.64165518e-01 1.00000000e+00
 1.00000000e+00 1.00000000e+00 1.16727283e-01 -5.74058317e-12
 5.08097757e-13 0.00000000e+00 0.0000000e+00 0.0000000e+00
-5.67845598e-14]
_____
markers : [[1.75 5.25]]
                                 1. 0.76923077
T: [0. 0.76923077 1. 1. 0. 0. 0. 0.
                                      0.
                                                  ]
==============
| Interpolations |
============
upwind: [0.
               0. 0.76923077 1.
                                       1. 1.
0.76923077 0.
                0.
                        0. 0.
                                          0.
0.
       ]
                                       1.
center : [0.
              0.38461538 0.88461538 1.
                                               0.88461538
0.38461538 0.
                0. 0. 0.
                                         0.
       ]
                 0.
center_h : [0.
                         0.86956522 1.
                                          1.
                                                  0.86956522
                 0. 0. 0.
0.
                                          0.
       0.
0.
       ]
 quick : [ 0.
                                                     1.
                                               0.
weno: [-8.82720977e-14 3.20551431e-12 9.32630974e-01 1.00000000e+00
 1.00000000e+00 1.00000000e+00 5.34457796e-01 -5.08907643e-13
 4.57707173e-14 0.00000000e+00 0.0000000e+00 0.0000000e+00
-8.82720977e-147
_____
markers : [[1.95 5.45]]
T: [0. 0.34482759 1. 1. 1. 0. 0. 0. 0.
                                           0.89108911
                                        0.
| Interpolations |
```

```
upwind: [0.
                0. 0.34482759 1. 1.
                                                   1.
                 0.
0.89108911 0.
                         0.
                                0.
                                           0.
0.
        1
               0.17241379 0.67241379 1.
                                         1. 0.94554455
center : [0.
0.44554455 0.
                 0.
                         0.
                               0.
                                           0.
0. ]
center_h : [0.
                0. 0.51282051 1.
                                          1. 0.94240838
0.
      0.
                  0.
                         0. 0.
                                           0.
0.
        1

    quick:
    [ 0.
    0.1331755
    0.34482759
    1.
    1.

    0.70973936
    -0.11138614
    0.
    0.
    0.

                                                        1.
 0.70973936 -0.11138614 0.
 0.
weno: [-9.79902817e-13 4.58286068e-11 6.26244898e-01 1.00000000e+00
 1.00000000e+00 9.9999999e-01 7.97500195e-01 -3.09237345e-13
 2.94438458e-14 0.00000000e+00 0.0000000e+00 0.0000000e+00
-9.79902817e-13]
_____
markers : [[2.15 5.65]]
        0.
                                   1.
                                           0.94890511
Τ : [O.
                  0.98265896 1.
                  0.
                                  0. 0.
0.
                          0.
                                                    ]
         0.
| Interpolations |
===========
upwind: [0.
                         0. 0.98265896 1.
                 0.
0.94890511 0.
                         0.
                                   0.
                 0.
                                       0.
0.
        ]
center: [0.
                        0.49132948 0.99132948 1.
                 0.
                                                0.97445255
0.47445255 0.
                 0.
                         0. 0. 0.
       ]
                                   0.99125364 1.
center_h : [0.
                 0.
                          0.
                                                    0.97378277
                          0. 0. 0.
0.
                  0.
         0.
0.
       ]
 0.03702638 0.98265896 1.
0.84881901 -0.11861314 0. 0.
quick : [ 0.
                                                        1.
                                                 0.
weno: [0.00000000e+00-4.23433644e-14 1.38197729e-12 9.94219880e-01
 1.00292740e+00 9.93386695e-01 9.06209525e-01 -2.51716786e-13
 2.43831429e-14 0.00000000e+00 0.0000000e+00 0.00000000e+00
 0.0000000e+001
_____
markers : [[2.35 5.85]]
                 0.94890511 1. 1.
        0.
                                             0.98265896
                  0.
                                0.
                                         0.
                       0.
                                                   ]
```

| Interpolations |

```
upwind: [0.
                       0. 0.94890511 1.
                0.
                                                1.
0.98265896 0.
                        0.
                0.
                                 0.
                                         0.
0.
       1
                       0.47445255 0.97445255 1. 0.99132948
                0.
center: [0.
0.49132948 0.
                         0.
                                 0.
                                      0.
                0.
0. ]
                         0.
center_h : [0.
                                 0.97378277 1. 0.99125364
                0.
0.
      0.
                 0.
                         0.
                                 0. 0.
0.
        1
            0. 0.09832136 0.94890511 1.
quick : [ 0.
                                                     1.
 0.94541478 -0.12283237 0.
                            0.
                                     0.
                                               0.
 0.
weno: [0.00000000e+00-4.70246327e-14 1.55094076e-12 9.82987433e-01
 1.00303620e+00 9.94194728e-01 9.68206702e-01 -2.24802505e-13
 2.19558186e-14 0.00000000e+00 0.0000000e+00 0.0000000e+00
 0.0000000e+00]
_____
markers : [[2.55 6.05]]
T : [0. 0.
                    0.89108911 1.
                                 1.
                                0.
                                         0.
0.34482759 0.
                 0.
                         0.
| Interpolations |
===========
upwind: [0.
                       0. 0.89108911 1.
1. 0.34482759 0.
                                 0.
                        0.
                                        0.
0.
       ]
                      0.44554455 0.94554455 1.
center : [0.
                                                  1.
0.67241379 0.17241379 0.
                        0. 0.
                                     0.
       ]
center_h : [0.
                0.
                         0.
                                 0.94240838 1.
                         0. 0.
0.51282051 0.
                0.
                                     0.
       ]
0.
quick : [ 0.
                    0.17425065 0.89108911 1.
                0.
        0.1273076 -0.04310345 0.
                                     0.
                                               0.
weno: [ 0.00000000e+00 -5.67845598e-14 1.91465558e-12 9.64165518e-01
 1.00000000e+00 1.00000000e+00 1.00000000e+00 1.16727283e-01
-5.74058317e-12 5.08097757e-13 0.0000000e+00 0.0000000e+00
 0.0000000e+001
_____
markers : [[2.75 6.25]]
T : [O.
        0.
                   0.76923077 1. 1.
                                            1.
                             0.
                 0.
                                         0.
0.76923077 0.
                      0.
===========
| Interpolations |
```

```
upwind : [0. 0.
                      0. 0.76923077 1.
                                              1.
       0.76923077 0.
                       0.
1.
                               0.
                                       0.
0.
       1
center : [0.
                     0.38461538 0.88461538 1.
               0.
                                              1.
0.88461538 0.38461538 0.
                       0.
                               0.
0. ]
center_h : [0. 0.
                      0.
                               0.86956522 1.
0.86956522 0.
               0.
                       0.
                               0. 0.
0.
   ]
quick: [ 0. 0. 0.24342635 0.76923077 1.
                                                   1.
 1. 0.50146178 -0.09615385 0. 0. 0.
        1
 0.
weno : [ 0.00000000e+00 -8.82720977e-14 3.20551431e-12 9.32630974e-01
 1.00000000e+00 1.00000000e+00 1.00000000e+00 5.34457796e-01
-5.08907643e-13 4.57707173e-14 0.0000000e+00 0.0000000e+00
 0.00000000e+00]
_____
markers : [[2.95 6.45]]
T : [0. 0.
                               1.
               0.34482759 1.
                              0.
                                   0.
               0.
0.89108911 0.
                        0.
| Interpolations |
_____
upwind: [0.
                      0. 0.34482759 1.
1. 0.89108911 0.
                       0.
                               0. 0.
0.
       ]
                     0.17241379 0.67241379 1.
center : [0. 0.
0.94554455 0.44554455 0.
                       0. 0. 0.
      ]
               0.
                       0.
                               0.51282051 1.
center_h : [0.
                        0. 0. 0.
0.94240838 0.
               0.
0.
quick : [ 0.
                    0.1331755 0.34482759 1.
               0.
      0.70973936 -0.11138614 0.
                                   0.
                                            0.
weno: [0.00000000e+00 -9.79902817e-13 4.58286068e-11 6.26244898e-01
 1.00000000e+00 1.00000000e+00 9.9999999e-01 7.97500195e-01
-3.09237345e-13 2.94438458e-14 0.0000000e+00 0.0000000e+00
 0.0000000e+001
_____
markers : [[3.15 6.65]]
T : [0. 0.
                  0.
                       0.98265896 1.
                                        1.
                                     0.
                     0. 0.
                0.
0.94890511 0.
=============
| Interpolations |
```

```
upwind : [0. 0.
                       0.
                                0. 0.98265896 1.
       0.94890511 0.
                        0.
                                 0.
1.
                                         0.
0.
       1
center : [0.
                       0.
                               0.49132948 0.99132948 1.
0.97445255 0.47445255 0.
                        0.
                                 0.
                                         0.
0.
center_h : [0. 0.
                         0.
                                 0. 0.99125364 1.
0.97378277 0.
                0.
                         0.
                                  0.
0.
   ]

    1ick:
    [ 0.
    0.
    0.03702638
    0.98265896
    1.

    1.
    0.84881901
    -0.11861314
    0.
    0.
    0.

quick: [ 0. 0.
 0.
9.94219880e-01 1.00292740e+00 9.93386695e-01 9.06209525e-01
-2.51716786e-13 2.43831429e-14 0.00000000e+00 0.0000000e+00
 0.0000000e+00]
_____
markers : [[3.35 6.85]]
                         0.94890511 1.
T : [0. 0.
                   0.
                 0.
                        0.
0.98265896 0.
                                 0.
                                         0.
| Interpolations |
===========
upwind: [0.
                               0. 0.94890511 1.
                        0.
1. 0.98265896 0.
                        0.
                                 0.
                                          Ο.
0.
       ]
center: [0.
                       0.
                               0.47445255 0.97445255 1.
0.99132948 0.49132948 0.
                        0.
                                 0. 0.
       ]
center_h : [0.
                0.
                         0.
                                  0.
                                          0.97378277 1.
                                  0.
0.99125364 0.
                0.
                         0.
                                         0.
0.
quick : [ 0.
                        0.
                              0.09832136 0.94890511 1.
                0.
       0.94541478 -0.12283237 0.
                                               0.
                                     0.
weno : [ 0.00000000e+00 0.00000000e+00 -4.70246327e-14 1.55094076e-12
 9.82987433e-01 1.00303620e+00 9.94194728e-01 9.68206702e-01
-2.24802505e-13 2.19558186e-14 0.0000000e+00 0.0000000e+00
 0.0000000e+001
_____
markers : [[3.55 7.05]]
                    0.
                         0.89108911 1.
        0.
                                          1.
                                       0.
                     0.
        0.34482759 0.
                              0.
============
| Interpolations |
```

```
upwind: [0. 0. 0. 0. 0. 0.89108911 1. 1. 1. 0.34482759 0. 0. 0.
0.
       1
center: [0. 0. 0.44554455 0.94554455 1.
      0.67241379 0.17241379 0.
                                0.
       1
]
0.

    quick:
    [ 0.
    0.
    0.17425065
    0.89108911
    1.

    1.
    1.
    0.1273076
    -0.04310345
    0.
    0.

 0.
weno: [0.00000000e+00 0.00000000e+00 -5.67845598e-14 1.91465558e-12
 9.64165518e-01 1.00000000e+00 1.00000000e+00 1.00000000e+00
 1.16727283e-01 -5.74058317e-12 5.08097757e-13 0.00000000e+00
 0.0000000e+00]
_____
markers : [[3.75 7.25]]
T: [0. 0. 0. 0.76923077 1. 1. 1. 1. 0.76923077 0. 0. 0. 0. ]
| Interpolations |
==============
upwind: [0. 0. 0. 0. 0.76923077 1.
1. 1.
               0.76923077 0.
                                0.
                                        0.
0.
       ]
center: [0. 0. 0. 0.38461538 0.88461538 1.
1. 0.88461538 0.38461538 0.
                                0. 0.
      ]
center_h : [0. 0.
       ]
0.
                0. 0.24342635 0.76923077 1.
quick: [ 0.
       1. 0.50146178 -0.09615385 0.
weno: [0.00000000e+00 0.00000000e+00 -8.82720977e-14 3.20551431e-12
 9.32630974e-01 1.00000000e+00 1.0000000e+00 1.0000000e+00
 5.34457796e-01 -5.08907643e-13 4.57707173e-14 0.00000000e+00
 0.0000000e+001
_____
markers : [[3.95 7.45]]
T: [0. 0. 0. 0.34482759 1. 1. 1. 0.89108911 0. 0. 0. 0. 0.
T : [0. 0.
===============
```

| Interpolations |

\_\_\_\_\_

```
upwind: [0. 0. 0. 0. 0. 0.34482759 1. 1. 1. 0.89108911 0. 0. 0.
0.
      1
center: [0. 0. 0. 17241379 0.67241379 1.
    0.94554455 0.44554455 0.
1.
                            0.
                                   0.
      ]
0.
0.
      ]
quick: [0. 0. 0. 0.1331755 0.34482759 1. 1. 0.70973936 -0.11138614 0. 0. 0. 0.
6.26244898e-01 1.00000000e+00 1.00000000e+00 9.9999999e-01
 7.97500195e-01 -3.09237345e-13 2.94438458e-14 0.00000000e+00
 0.00000000e+00]
```