Examples of trajectory analysis

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1 Distances between two segments

```
> sites = c(1,1,2,2)

> xy1<-rbind(c(0,0),c(0,2.5),
+            c(1,0.5),c(1,3))
> segmentDistances(dist(xy1),sites,distance.type = "Hausdorff")$Dseg

         1[1-2]
2[1-2] 1.118034

> segmentDistances(dist(xy1),sites,distance.type = "directed-segment")$Dseg

         1[1-2]
2[1-2] 1.118034

> xy2<-rbind(c(0,0),c(0,2.5),
+            c(0,1),c(1.8,2.5))
> segmentDistances(dist(xy2),sites, distance.type = "Hausdorff")$Dseg

       1[1-2]
2[1-2]    1.8

> segmentDistances(dist(xy2),sites, distance.type = "directed-segment")$Dseg

       1[1-2]
2[1-2]    1.8
```

```
> xy3<-rbind(c(0,0),c(0,2.5),
+            c(-0.5,2),c(2,2))
> segmentDistances(dist(xy3),sites,distance.type = "Hausdorff")$Dseg

       1[1-2]
2[1-2]      2

> segmentDistances(dist(xy3),sites,distance.type = "directed-segment")$Dseg

       1[1-2]
2[1-2]      2

> xy4<-rbind(c(0,0),c(0,2.5),
+            c(0,2.5),c(1.8,1))
> segmentDistances(dist(xy4),sites, distance.type = "Hausdorff")$Dseg

         1[1-2]
2[1-2] 1.920553

> segmentDistances(dist(xy4),sites, distance.type = "directed-segment")$Dseg

       1[1-2]
2[1-2]    2.5

> xy5<-rbind(c(0,0),c(0,2.5),
+            c(1,3),c(1,0.5))
> segmentDistances(dist(xy5),sites, distance.type = "Hausdorff")$Dseg

         1[1-2]
2[1-2] 1.118034

> segmentDistances(dist(xy5),sites, distance.type = "directed-segment")$Dseg

       1[1-2]
2[1-2]    3.5

> xy6<-rbind(c(0,2.5),c(0,0),
+            c(1,0.5),c(1,3))
> segmentDistances(dist(xy6),sites, distance.type = "Hausdorff")$Dseg

         1[1-2]
2[1-2] 1.118034

> segmentDistances(dist(xy6),sites, distance.type = "directed-segment")$Dseg

       1[1-2]
2[1-2]    3.5
```

2 Distances between two-segment trajectories

```
> sites = c(1,1,1,2,2,2)

> xy1<-matrix(0, nrow=6, ncol=2)
> xy1[2,2]<-1
> xy1[3,2]<-2
> xy1[4:6,1] <- 0.5
> xy1[4:6,2] <- xy1[1:3,2]
> trajectoryDistances(dist(xy1),sites, distance.type = "Hausdorff")

         1
2 1.118034

> trajectoryDistances(dist(xy1),sites, distance.type = "SPD")

    1
2 0.5

> trajectoryDistances(dist(xy1),sites, distance.type = "DSPD")

    1
2 0.5

> xy2<-xy1
> xy2[6,]<-c(1,1.8)
> trajectoryDistances(dist(xy2),sites, distance.type = "Hausdorff")

         1
2 1.280625

> trajectoryDistances(dist(xy2),sites, distance.type = "SPD")

          1
2 0.6589997

> trajectoryDistances(dist(xy2),sites, distance.type = "DSPD")

     1
2 0.75

> xy3<-xy2
> xy3[4,]<-c(1,0.2)
> trajectoryDistances(dist(xy3),sites, distance.type = "Hausdorff")

         1
2 1.280625
```

```
> trajectoryDistances(dist(xy3),sites, distance.type = "SPD")

          1
2 0.8179994

> trajectoryDistances(dist(xy3),sites, distance.type = "DSPD")

  1
2 1

> xy4<-xy2
> xy4[4,]<-xy2[6,]
> xy4[6,]<-xy2[4,]
> trajectoryDistances(dist(xy4),sites, distance.type = "Hausdorff")

         1
2 1.280625

> trajectoryDistances(dist(xy4),sites, distance.type = "SPD")

          1
2 0.6589997

> trajectoryDistances(dist(xy4),sites, distance.type = "DSPD")

         1
2 1.199329
```