title: “LAB 11”

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output: html_document

LABORATORIO 4: Visión clara del espacio-producto: CASO REAL_exportaciones hidalguenses
##

Objetivo: Estimar el Maximum Spanning Tree -Árbol de expansión máxima- (asegurar una visión clara del espacio-producto) Red troncal: Estructura general de la red: vamos a poder ver redes complejas Regla 1: mantener n-1 conexiones como máximo Regla 2: Quitar las conexiones con el peso más bajo, nos vamos quedar con las del peso máximo (menos conexiones) Regla 3: No crear nodos aislados ——————

1.Cómo crear una Visión clara del espacio-producto: árbol de expansión máxima (MST) Paquete: Balland, P.A. (2017) Economic Geography in R: Introduction to the EconGeo Package, Papers in Evolutionary Economic Geography, 17 (09): 1-75 Para instalar: https://www.paballand.com/install-r (https://www.paballand.com/install-r)

Cargar paquete

```
library(EconGeo)
```

```
##
## Please cite EconGeo in publications as:
```

```
##  Balland, P.A. (2017) Economic Geography in R: Introduction to the EconGeo Package, Papers in Evolutionary Eco
nomic Geography, 17 (09): 1-75
```

Ubicar archivo

```
M = as.matrix(
  read.csv("~/GitHub/JPAS_LABS24/INPUT/CUADERNOS MD/relatednessbinario.csv" ,
           sep = ",",
           header = T,
           row.names = 1))
```

Visualizar e Importar matriz relatednessbinario

```
head (M[,1:10])
```

```
##      X102 X210 X401 X403 X406 X510 X602 X603 X702 X703
## X102    0    0    1    1    0    0    0    0    0    0
## X210    0    0    0    1    1    0    0    0    1    0
## X401    1    0    0    0    0    0    0    0    0    0
## X403    1    1    0    0    1    0    0    0    0    0
## X406    0    1    0    1    0    0    0    0    1    0
## X510    0    0    0    0    0    0    0    0    0    0
```

```
dim (M)
```

```
## [1] 429 429
```

Grafica la matriz de proximidades natural

```
library (igraph)
```

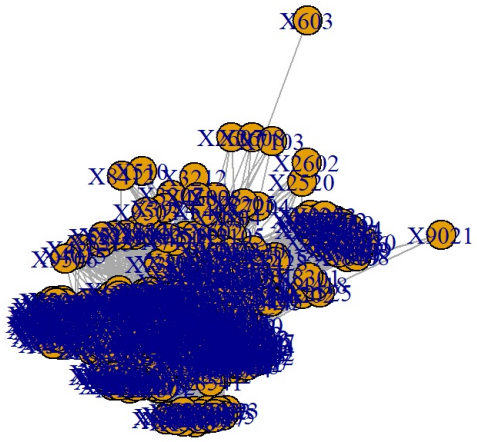
```
##
## Attaching package: 'igraph'
```

```
## The following object is masked from 'package:EconGeo':
##
##     diversity
```

```
## The following objects are masked from 'package:stats':
##
##     decompose, spectrum
```

```
## The following object is masked from 'package:base':
##
##     union
```

```
red_hidalgo1 <- graph.adjacency(M, mode= "undireCted" , weighted= TRUE)
plot(red_hidalgo1)
```



Transforma la matriz en en NEGATIVA y para identificar los máximos

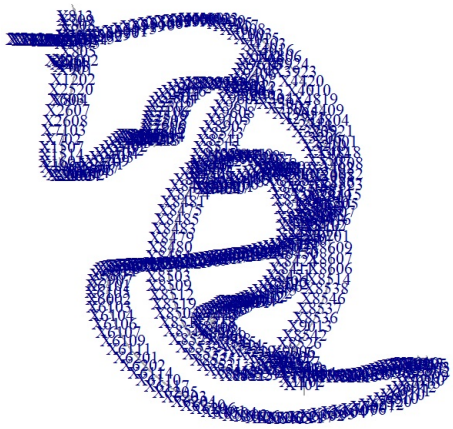
```
M <- -M
head(M[,1:6])
```

```
##      X102 X210 X401 X403 X406 X510
## X102    0    0   -1   -1    0    0
## X210    0    0    0   -1   -1    0
## X401   -1    0    0    0    0    0
## X403   -1   -1    0    0   -1    0
## X406    0   -1    0   -1    0    0
## X510    0    0    0    0    0    0
```

Grafica la nueva matriz negativa con MST

```
red_hidalgo2 <- graph.adjacency(M, mode= "undirected", weighted = TRUE)
MST <- minimum.spanning.tree(red_hidalgo2)
plot(MST, vertex.shape= "none", vertex.label.cex=.7)
```

```
## Warning in v(graph): Non-positive edge weight found, ignoring all weights
## during graph layout.
```



Exportar datos nodos n-1

```
write.graph(MST,file= "redhidalgo2.gml", format="gml")
```

Matriz de proximos adyaentes (nuevo relacionamiento). exportar LISTA DE EDGE

```
A <- get.adjacency(MST, sparse = F)
```

Exportar matriz de proximos adyacentes

```
write.csv(A, file = "AdyacentesConMST.csv")
```