OpenAlex2Pajek

Institutions, the saturation approach, and co-authorship between countries

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Outline

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Current version of slides (May 22, 2024 at 17 : 35): slides PDF
https://github.com/bavla/OpenAlex

OpenAlex2Pajek

We continue the development of support for the conversion of OpenAlex data into Pajek's networks.

The saturation approach was split into two phases:

- the saturation phase dealing only with the citation network for the selection of the set of relevant works W
- creation of bibliographic networks for the selected set of relevant works W

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saturation approach

The set W is determined iteratively using the function `OpenAlex2PajekCite`.

1. Create the basic query Q and determine using `OpenAlex2PajekCite` the initial version of W; list of old candidates C is empty
2. Analyze using Pajek macro `expNodes` the obtained citation network and identify new candidates N for relevant works. If N is empty **STOP**.
3. Save the list N in a CSV file. Using in R the command `joinLists("Cold.csv","N.csv","Cnew.csv")` join the old candidates and new candidates into the current list of candidates (removing duplicates).
4. Using `OpenAlex2PajekCite` determine the new version of W; go to **2**.

Creating a collection

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saturation approach

To create the collection we first change the parameter `select` in the query Q to `selAll`. Afterward, we run the function `OpenAlex2PajekAll`.

Currently, we get a collection of bibliometric networks:

```
>>> n Citation Cite
>>> c publication year
>>> c type of publication
>>> c language of publication
>>> c cited by count
>>> c countries distinct count
>>> c referenced works
>>> n Authorship WA
>>> n Sources WJ
>>> n Keywords WK
>>> n Countries WC
```

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saturation approach

I don't like the keywords provided by OpenAlex. In a future version of OpenAlex2Pajek I will provide an alternative based on words from the work's title (and abstract).

In phase one we could consider also other available properties of nodes (works).

On the **to do** list is to remove the use of Pajek from phase one and program the iterations in R.

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converting dictionary into data frame

Internal: dict2DF

```
dict2DF <- function(dict,ind) {
  DF <- as.data.frame(do.call(rbind, as.list(dict)))
  return(DF[order(unlist(unname(DF[[ind]]))),])
}
```

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Institutions

In some cases, such as all works of researchers from a selected institution, the saturation phase is not needed.

Internal: Young universities
GitHub: HKUST, IMFM

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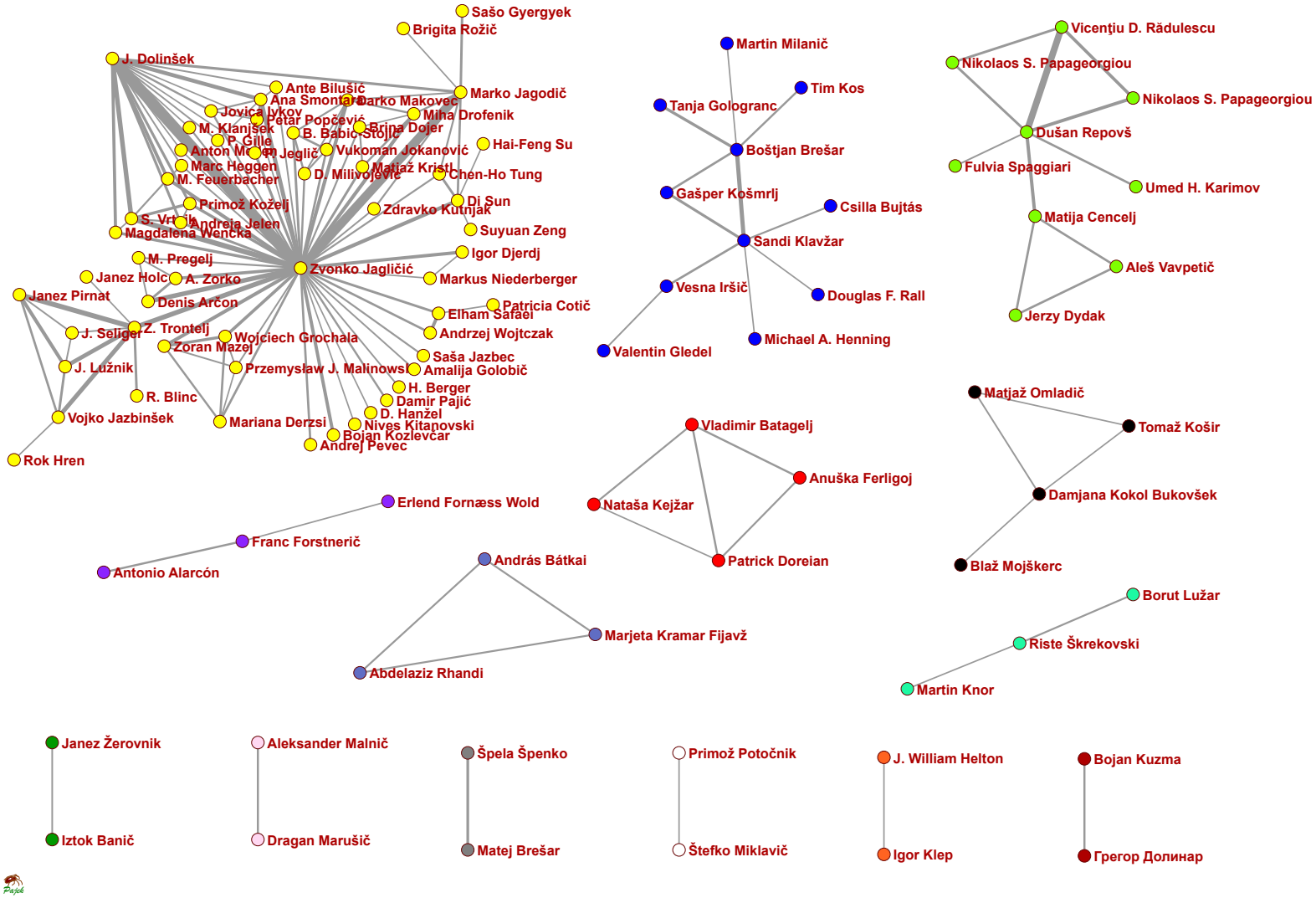
IMFM co-authorship link cut at level 7



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Co-authorship between countries

We developed a function `coAuthorship` that creates a sequence of temporal networks describing the co-authorship between world countries.

Internal: meaning; total; years

GitHub: pics; 1-neighbors

Problem: OpenAlex is using ISO 2-character country codes. Only currently existing countries are considered.

It seems that OpenAlex exports data for only up to 200 most active countries.
Assuming the symmetry of the countries' co-authorship matrix we can get a complete matrix.

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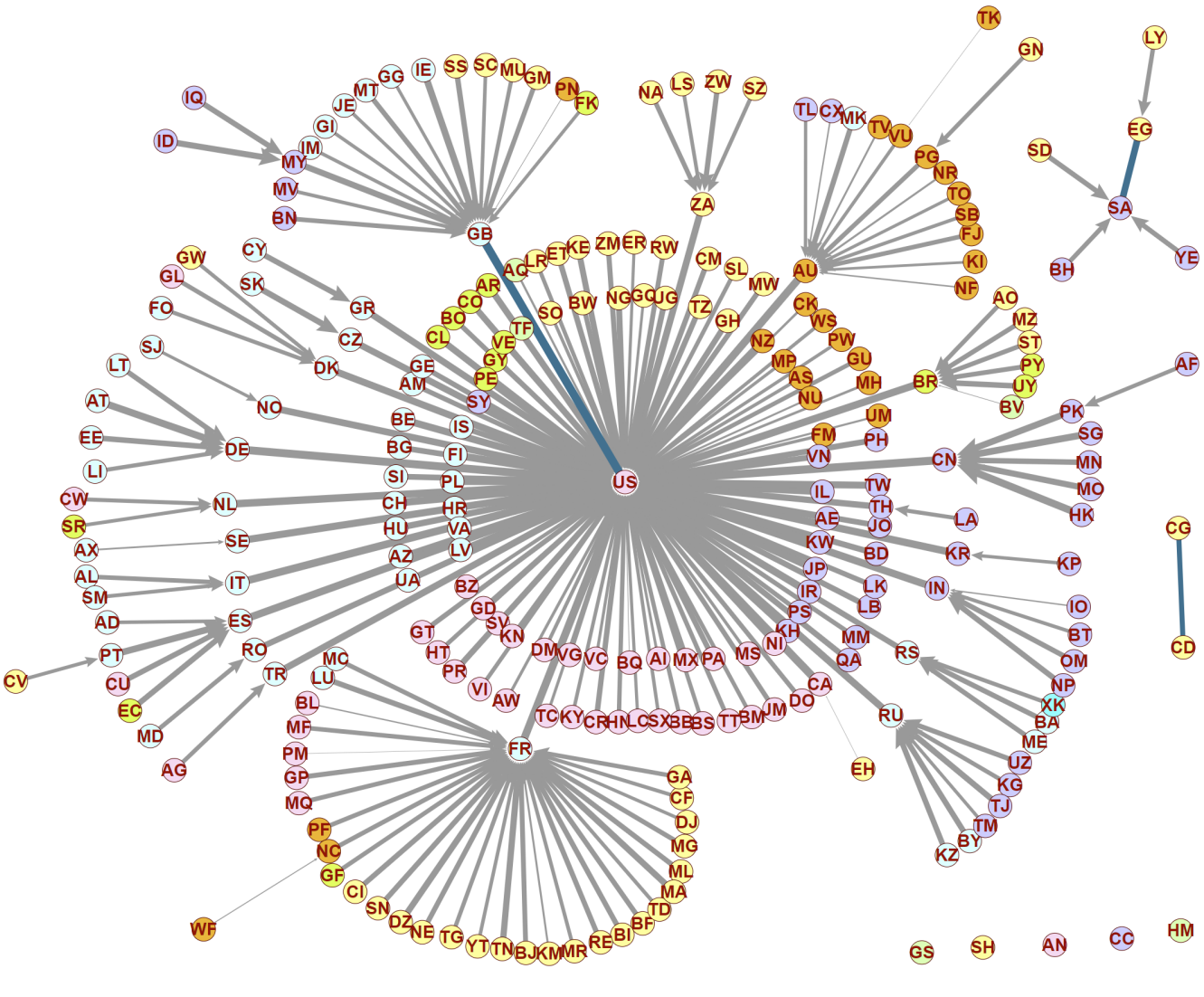
Total co-authorship between countries/1-neighbors



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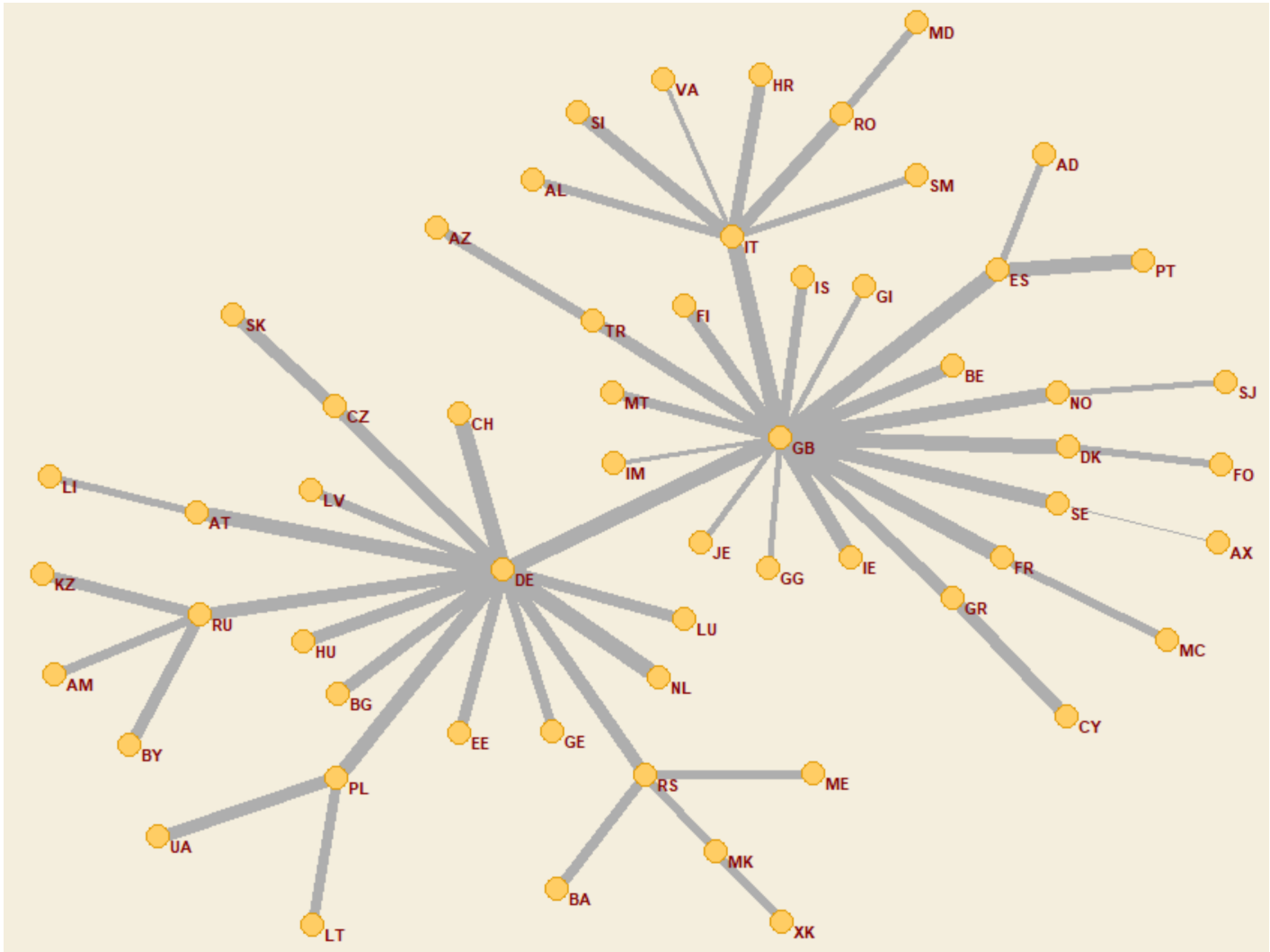
Co-authorship between European countries 2020 /1-neighbors



Internal: Europe; GitHub: Europe