

The institutes of the Russian Academy of Science and unemployed mathematicians by Wikidata's version

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Abstract

This article is about research of the RAS institutes using the knowledge base of the international project Wikidata. With the help of SPARQL queries for items classified as "institute of the RAS" the following were received: the list of all institutes of the RAS, the map of institutes of the RAS that shows geographic position of all institutes. In addition, the completeness of Wikidata was evaluated. The Russian mathematicians without property named "employer" was chosen to fill Wikidata. Developed exercises designed to test knowledge of the topic. For authors who will work further on this article, the new tasks were proposed.

1 Names of the the Russian Academy of Sciences

The Russian Academy of Sciences has several names in different periods of the existence:

- The St. Petersburg Academy of Sciences (1724-1917).
- The Russian Academy of Sciences (1917-1925).
- The Academy of Sciences of the Soviet Union (1925-1991).
- The Russian Academy of Sciences (1991).

2 Instances of the object “Institute of the Russian Academy of Science”

- Object: institute of the Russian Academy of Science (Q4201890).
- Property: instance of (P31).

Let’s build a list of all institutes of the Russian Academy of Science. See the listing 1.

```
1 #List of institutes of the Russian Academy of Science
2 SELECT ?inst ?instLabel
3 WHERE {
4   ?inst wdt:P31 wd:Q4201890. # institutes of the Russian Academy
5   of Science
6   SERVICE wikibase:label { bd:serviceParam wikibase:language "en"
7   }
8 }
```

Listing 1: the list of institutes of the Russian Academy of Science

SPARQL-query, 250 results.

The most complete and well-described institutes of the Russian Academy of Science on Wikidata are: Budker Institute of Nuclear Physics, Steklov Institute of Mathematics, Pushkin House.

Almost empty and uninformative institutes of the Russian Academy of Science on Wikidata were: Institute of Applied Physics, Institute for US and Canadian Studies, Institute of Solid State Physics.

3 Institutes of the Russian Academy of Science on the map of Russia

Let’s draw the map with institutes of the Russian Academy of Sciences with the help of the property "coordinate location". See the listing 2.

```
1 #List of institutes of the Russian Academy of Science
2 #defaultView:Map
3 SELECT ?inst ?instLabel ?location WHERE {
4   ?inst wdt:P31 wd:Q4201890. #institute
5   ?inst wdt:P17 wd:Q159. #Russia
6   ?inst wdt:P625 ?location.#location
7
8   SERVICE wikibase:label { bd:serviceParam wikibase:language "en" }
9 }
```

Listing 2: institutes on the map of the Russia

SPARQL-query, 61 results.

The map below shows that the greatest number of institutes of the RAS are located in Moscow, Saint-Petersburg and central part of Russia.

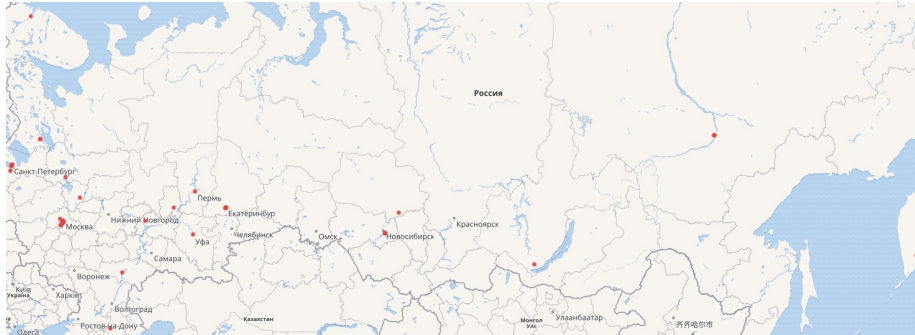


Figure 1: Institutes of RAS on the map of Russia

4 Completeness of the Wikidata

Let's analyze the completeness of Wikidata. The number of institutes of the Russian Academy of Science by the results of the first SPARQL script is equal 250 results. See the listing 1.

There are only objects whose field 'Label' is filled in English. There are more institutes of the Russian Academy of Science in fact. The decision was made to modify the first script that would have returned all the objects including institutes which don't have the property 'label' to get better results. It looks like this: SPARQL-query.

According to an official source[2], the number of the RAS institutes is equal to 653, as of 2016.

According to the category Institutes of the Russian Academy of Sciences in the Russian Wikipedia, the number of institutes of the Russian Academy of Science is equal to 241, that is, 37% of 653.

According to the category Institutes of the Russian Academy of Sciences in the English Wikipedia, the number of the RAS institutes is 44, i.e. 6.7% of the 653.

5 Filling Wikidata

Let's build a list of the Russian mathematicians with no properties such as "employer". See the listing 3.

```

1 #The Russian mathematicians
2 SELECT ?mathematician ?mathematicianLabel
3 WHERE {
4   ?mathematician wdt:P106 wd:Q170790.      #mathematicians
5   ?mathematician wdt:P27 ?country.        #country of citizenship
6   FILTER(?country = wd:Q34266 || ?country = wd:Q15180 || ?country =
7     wd:Q159). #Russian Empire, USSR, Russia
8   SERVICE wikibase:label { bd:serviceParam wikibase:language "en" }
9   MINUS { ?mathematician wdt:P108 [] }

```

```
9 }  
10 GROUP BY ?mathematician ?mathematicianLabel
```

Listing 3: Russian mathematicians with no properties "employer"

SPARQL-query, 497 results.

All mathematicians found by SPARQL-query are 1263 persons.

Thus, according to Wikidata percentage of the Russian mathematicians, where the "employer" is not filled in, equals to 39.6%.

References

- [1] Institutes of the Russian Academy of Science. Research in programming Wikidata // English Wikiversity. https://en.wikiversity.org/wiki/Research_in_programming_Wikidata/Institutes_of_Russian_Academy_of_Science, 2018.
- [2] *The Russian Academy of Science*. 2018.