

## Data Structures Project

**Dataset Used:** General Relativity and Quantum Cosmology collaboration network

Total Nodes: 5242

Total Nodes: 28980

Sink Nodes: 0

Source Nodes: 0

From this it can be concluded that there are no separate nodes or Isolated nodes and all the nodes are connected to each other somehow.

**Degree Distribution:** All the degree distributions wether they are In or out are evenly distributed and all of them are very low as all of them have values greater than 2 decimal places

```
Please enter the minimum Distribution till which you want to display : 0
Please enter the maximum Distribution till which you want to display : 1
In Degree distribution
```

Vertex	Distribution
3466	0.00152614
937	0.000953834
5233	0.000381534
8579	0.000953834
10310	0.00247997
15931	0.00190767
17038	0.00324304
18720	0.000572301
19607	0.000763068
1854	0.00152614
4583	0.000572301
9572	0.00648607
10841	0.00133537
13056	0.00190767
14982	0.000381534
16310	0.00324304
19640	0.00476917
23855	0.00152614
24372	0.000190767
24814	0.0040061
5052	0.00553224
899	0.000572301

**Shortest Paths Distribution:** Most of the shortest paths have a length of 6 and most of the paths lie in the range of 4 to 8. The greatest length of shortest path (or the diameter of graph) is 17.

Shortest Path distribution	
Length	Number of Paths
1	28968
2	127480
3	549958
4	1809012
5	3828662
6	4708218
7	3467244
8	1714424
9	681594
10	254116
11	86492
12	24664
13	5710
14	1172
15	234
16	66
17	14
18	0
19	0
20	0
21	0
22	0
23	0
24	0
25	0

### Connected Components:

There is only one Weakly connected component which is of Size 5242 means that whole graph resides in it and due to being a very large data it was impossible to calculate the Strongly connected components of this graph with the normal processing power.