



## Authors & Readers

[Submission](#)

[LaTeX Macros](#)

[TOC alert](#)

[RSS feeds](#)

[Permission Requests](#)

[Policy on Publishing Integrity](#)

[FAQ](#)

## Tweets by @EPJscience

The EPJ journals Retweeted



**Luca Barberi**  
@lucabrb\_

Great #biophysics #conference to take place in Gif-sur-Yvette (south of Paris) on Oct. 22-24! No registration fees if you're a student :) Check it out at [ptms.u-psud.fr/physbio2018/](http://ptms.u-psud.fr/physbio2018/)



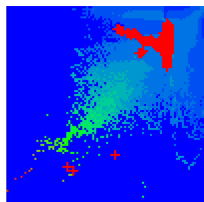
26 Jun 2018

[Embed](#)

[View on Twitter](#)

## EPJ B Highlight - Is the Bitcoin network an oligarchy?

Published on Tuesday, 26 June 2018 13:39



Density of Bitcoin transaction where red crosses mark a specific community of owners.

**New study of Bitcoin transactions reveals hidden owner communities and a high-concentration of wealth distributed between a few people**

Cryptocurrencies like Bitcoin can be analysed because every transaction is traceable. This means that they are an attractive system for physicists to study. In a paper published in [EPJ B](#), Leonardo Ermann from the National Commission for Atomic Energy in Buenos Aires, Argentina, and colleagues from the University of Toulouse, France, have examined the structure of the Bitcoin-owner community by looking at the transactions of this cryptocurrency between 2009 and 2013. The team's findings reveal that Bitcoin owners are close to an oligarchy with hidden communities whose members are highly interconnected. This research has implications for our understanding of these emerging cryptocurrency communities in our society - as usual bank transactions are typically deeply hidden from the public eye. They could also be helpful to computer scientists, economists and politicians who could better understand handle them.

As part of their study, the authors construct a blueprint of this network - the so-called Google matrix. It helps them calculate key characteristics of the network, such as PageRank - known for underlining the Google search engine - which highlights the influence of ingoing transactions between individual Bitcoin owners. The author also rely on CheiRank, which highlights the influence of outgoing transactions between owners.

Based on such data, they identify an unusual circle-type structure within the range of transactions between Bitcoins owners. Until now, such a structure has never been reported for real networks. This means that there are hidden communities of nodes linking the currency owners through a long series of transactions.

Based on another characteristic of the network of transactions, the authors have also found that the main portion of the network's wealth is distributed between a small fraction of users.

**L. Ermann, K. M. Frahm and D. L. Shepelyansky (2018), Google matrix of Bitcoin network,**

European Physical Journal B **91**:127, DOI: [10.1140/epjb/e2018-80674-y](https://doi.org/10.1140/epjb/e2018-80674-y)

[All news](#)


+ Advanced search

## Open calls for papers

[EPJE Topical Issue: Dielectric Spectroscopy Applied to Soft Matter](#)

[EPJA Topical Issue: The first Neutron Star Merger Observation - Implications for Nuclear Physics](#)

[EPJ B Special Issue: Non-Linear and Complex Dynamics in Semiconductors and Related Materials](#)

[EPJ D Topical Issue: Many Particle Spectroscopy of Atoms, Molecules, Clusters and Surfaces \(MPS 2018\)](#)

[EPJ E Topical Issue: Branching Dynamics at Mesoscopic Scale](#)

[EPJ E Call for papers: Thermal non-equilibrium phenomena in soft matter](#)

[EPJ ST Special Issue: Microscopic dynamics, chaos and transport in nonequilibrium processes](#)

[EPJ AM Call for papers: Themed Issue on Terahertz metamaterials](#)

[EPJ D Topical Issue: Quantum Correlations](#)

[EPJ ST Special Issue: Topological States of Matter: Theory and Applications](#)

[EPJ B Special Issue: Complex Systems Science meets Matter and Materials](#)

[EPJ B Special Issue on Multiscale Materials Modeling](#)

[EPJ Data Science: Thematic series on human mobility](#)

[EPJ Data Science: Thematic Series on Individual and Collective Human Mobility:](#)

By using this website, you agree that EDP Sciences may store web audience measurement cookies and, on some pages, cookies from social networks. [More information and setup](#)



[EPJ Quantum Technology: Thematic Series on Space Applications of Quantum Technology](#)

[EPJ Techniques and Instrumentation: Thematic Series on Novel Plasma Diagnostics](#)

### Special issues

- [▶ General Information](#)
- [▶ Topical Issues/Focus Points](#)

***EPJ 2018 calendar***

[ABOUT](#)   [CONTACTS](#)

