Quantifying echo chamber effects in information spreading over political communication networks

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Echo chambers in online social networks, in which users prefer to interact only with ideologically-aligned peers, are believed to facilitate misinformation spreading and contribute to radicalize political discourse. In this paper, we gauge the effects of echo chambers in information spreading phenomena over political communication networks. Mining 12 millions of Twitter messages, we reconstruct a network in which users interchange opinions related to the impeachment of the former Brazilian President Dilma Rousseff. We define a continuous polarization parameter that allows to quantify the presence of echo chambers, reflected in two communities of similar sizes with opposite views of the impeachment process. By means of simple spreading models, we show that the capability of users in propagating the content they produce, measured by the associated spreadability, strongly depends on the their polarization. Users expressing pro-impeachment sentiments are capable to transmit information, on average, to a larger audience than users expressing anti-impeachment sentiments. Furthermore, the users' spreadability is strictly correlated to the diversity, in terms of political polarization, of the audience reached.