The SPIDER collaboration is a consortium funded by the 7th Framework Programme (FP7). SPIDER (Statistical Physics In Diverse Realisations) focusses on a broad set of issues that have proven to be best treated using methods originally developed in the framework of Statistical Physics.
These specific problems range from complex behaviour near surfaces, biological membranes and protein functionality further including poly-electrolyte surfactant complexes, and polymer embedded nano-composites.

Rather surprisingly the methods of statistical physics may also be applied to problems not usually associated with Physics.

Here, we discuss work performed by Prof Ralph Kenna and his then PhD student Padraig Mc Carron. In this work they analysed the networks of characters in Greek, Anglo-Saxon and Irish mythology comparing their mutual relation with those of real life social networks.
This study had enormous impact both within the scientific community as evidenced by high downloads of the paper as well as in the wider public as newspapers, magazines and even radio stations took up the story.
The paper formed the basis for a 1,000 word-article 'The Social Networks of Myths' – if Achilles used facebook (Sep 9, 2012, Sunday Review, Page 4). The New York Times Sunday Edition with a circulation of over 1,265,839 covered the story. The story was also translated into Portuguese 'Se Aquiles usasse o Facebook'. British Newspapers such as The Daily Telegraph, The Guardian and The Times each with a readership of about 1M took up the story.

Another interesting real life application for Statistical Physics lends itself to the theory of networks. As it appears, when relating different items it is often useful to describe these relations in terms of a network.

A specific application of the tools governing networks is given for instance by networks of Public Transportation (PT). It may be shown that depending on the size of these PT networks they may show universal behaviour in particular in the case of networks including nodes with high connectivity. Often these networks show high degree nodes (such as large train and/or bus stations with high connectivity). Whilst these nodes will be very useful in terms of the network structure they however also pose a risk as far as failure of a major Hub may lead to a local breakdown of the network which may propagate and impede the functioning of the Public Transport network. The task in this case is to build networks that are resilient against failure as well as possible attacks.

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