NUCLEAR PHYSICS HELPS DETECT FRAUD

Wageningen professor Joost Pennings will be tracking down stock-market fraud with technology from the Swiss particle physics lab CERN.

What does particle physics have to do with stock-market fraud? Both involve vast amounts of data and searching for a needle in a haystack. Professor of Commodity Futures Markets Joost Pennings had this brilliant insight when on a guided tour of CERN, the European centre for fundamental research on elementary particles in Geneva.

The experiments in CERN involve billions of collisions between elementary particles in ultra-short time periods. Try finding that one deviant collision that can advance our knowledge of physics in that mass of data. At CERN they use the data analysis program ROOT. On the stock exchange too, vast numbers of transactions take place in a short space of time, some of which might constitute dubious trading.

PHANTOM ORDERS

Pennings spotted the analogy and believes ROOT can help identify the dodgy transactions. Together with CERN and the Roermond Commodity Risk Management Expertise Centre (CORMEC), the professor will be spending the next three years on the detection of fraud in the commodity and financial markets. CORMEC specializes in commodity futures markets and risk management for farmers. Pennings will be focussing on spoofing, a way of driving up prices by placing phantom purchase orders. The market responds by increasing the price. The buyer then cancels the order and sells his own contracts at a profit. That might be clever but it is also illegal. Pennings wants not only to detect spoofing but also to prevent it by discovering such market movements in good time.

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Incidentally, this unusual collaboration was made possible by Pennings winning a competition organized by the Chicago Mercantile Exchange Group. The world's largest futures exchange organized a competition for the best research idea using their database of transactions. Pennings won and can now use the database for his research. **RK**