

New research increases understanding of Earth's magnetic field

March 9 2007

Research recently conducted at Delft University of Technology, Netherlands, marks an important step forward in understanding the origins of the Earth's magnetic field. The research findings are published this week in the scientific journal *Physical Review Letters*.

Science attributes the creation of the Earth's magnetic field to the movement of electricity conducting liquids in the molten core of the Earth. Researchers have recently conducted experiments to replicate and study this mechanism.

Experiments conducted in Riga (1999) revealed for the first time that a cylindrical-shaped fluid flow of metal moving in a spiralling motion can generate a slowly growing magnetic field. This was followed by the EU research project MAGDYN (2001-2005), which aimed to show how the generated magnetic field itself is capable of persisting.

The design of these experiments and the theoretical interpretation of the data relied heavily on the statistical simulation models developed by Dr. Sasa Kenjeres and Prof. Kemal Hanjalic of Delft University of Technology's Multi Scale Physics department. Moreover, their theoretical and statistical model was the first to explain and predict the observable effects in Riga.

Based on the findings of Kenjeres and Hanjalic, a new generation of experimental facilities have now been developed in the US (Los Alamos and Maryland, among other places), Grenoble and Russia (Perm). These

facilities will allow the Earth's magnetic core to be replicated more realistically than ever before. The new experiments are expected to provide valuable new insights into the Earth's magnetic field.

Source: Delft University of Technology

Citation: New research increases understanding of Earth's magnetic field (2007, March 9)
retrieved 25 April 2024 from <https://phys.org/news/2007-03-earth-magnetic-field.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.