NATURE | NEWS

LHC expects to restart within days

Attempts to clear the debris causing a short circuit appear successful.

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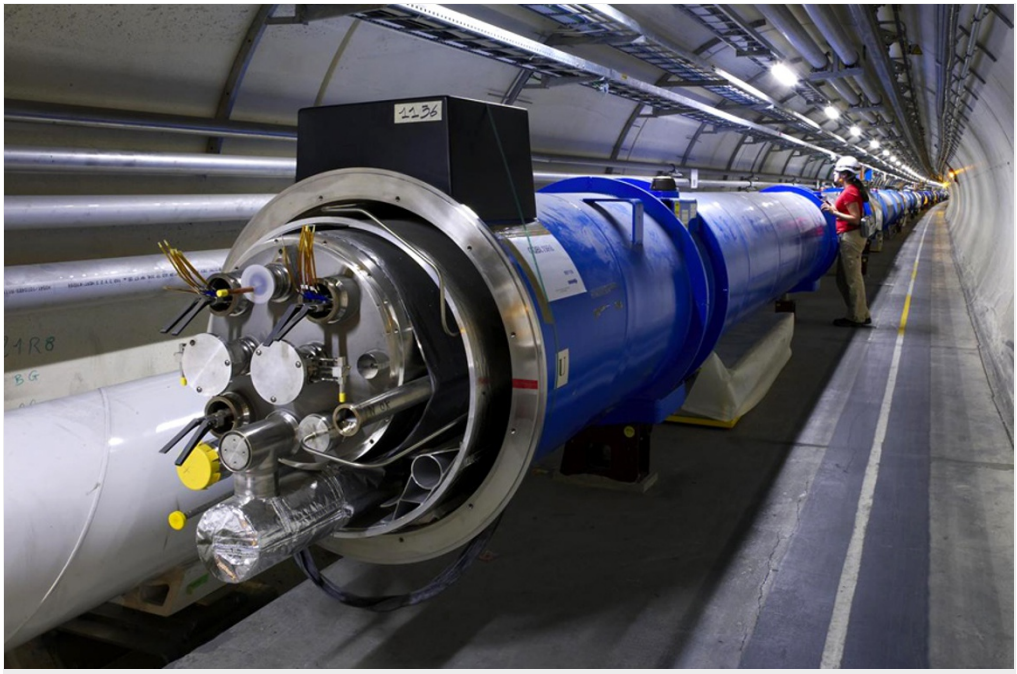

ATLAS Experiment 2014/CERN

A magnet module in the LHC tunnel during construction: its diode box, similar to the one where a fault emerged, is seen protruding at the bottom left.

Protons may whiz around the Large Hadron Collider (LHC) as early as this weekend, after a successful operation to fix a short circuit that had delayed its restart, according to Paul Collier, head of beams at CERN.

CERN, Europe's particle physics laboratory near Geneva, Switzerland, had planned to switch on the souped-up particle accelerator last week after a two-year shutdown for upgrades (see LHC 2.0: A new view of the Universe). But the lab put its plans on hold after the machine developed a fault.

Teams attributed the glitch to a piece of metal debris in a diode box, part of the safety system of one of the machine's superconducting magnets. The debris short-circuited the magnet's power supply.

Engineers' first attempt to remove the fragment appears to have been successful. On 30 March they sent an electrical discharge through the circuit to burn away the metal causing the fault. "It's a bit like deliberately blowing a fuse," says Collier.

Tests carried out today on the circuit suggest the remedy worked. "It passed. The short is gone," says Collier. Engineers must now re-install monitoring and protection equipment before they can re-power the circuit. "However, it looks good," he adds. "We hope to be ready to take beam sometime during the weekend."

If quick methods to remove the piece of metal had failed, the delay could have stretched to months. Removing the fragment manually would have meant warming the magnet to room temperature before cooling it again to its operating temperature of 1.9 kelvin, just above absolute zero.

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