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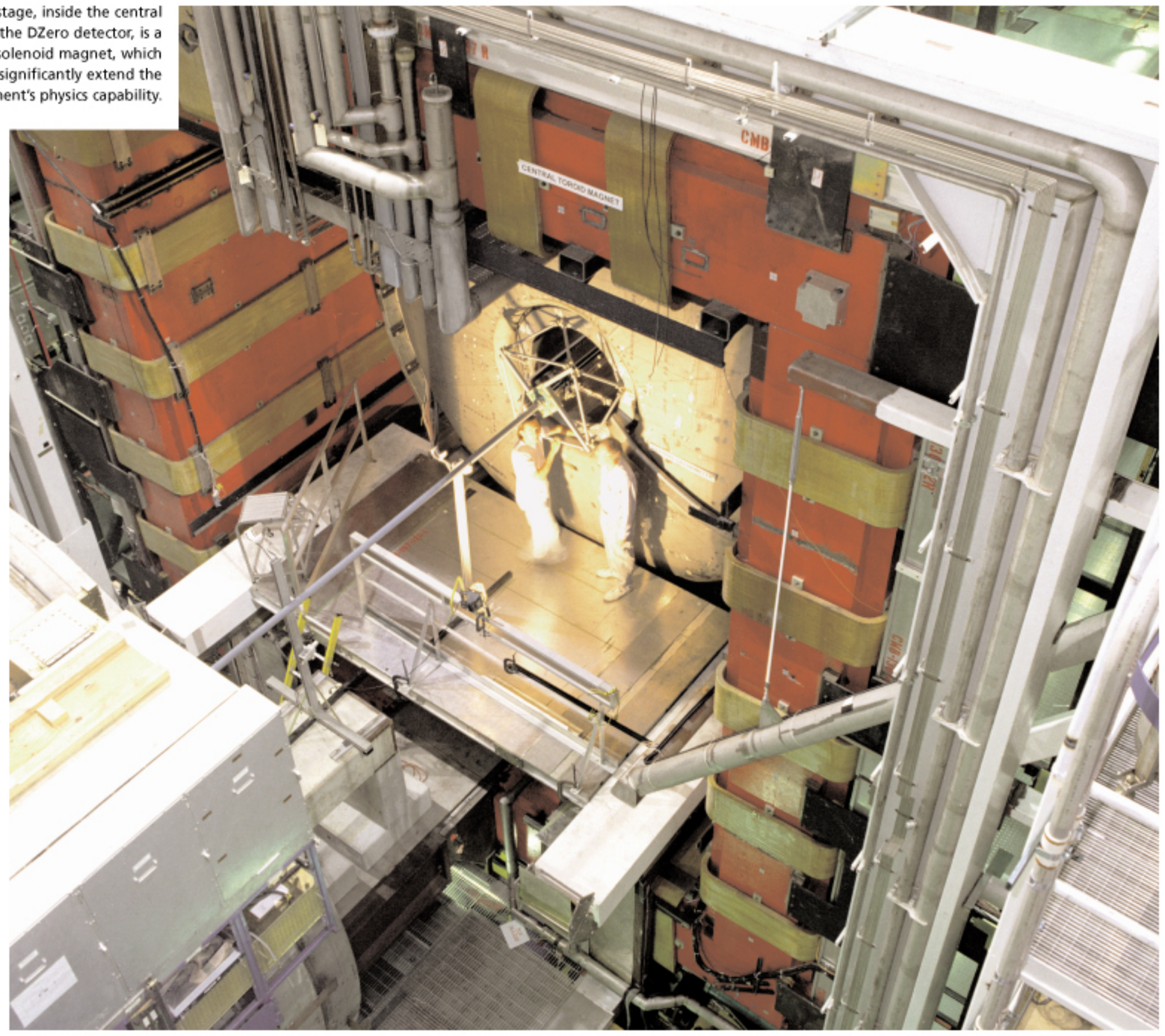
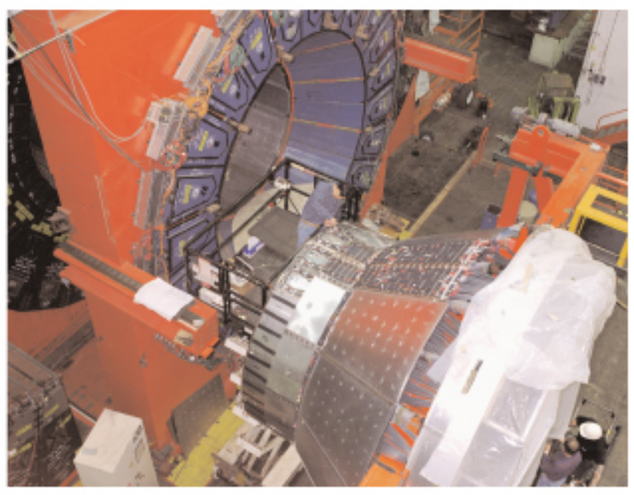
High Energy, High Luminosity- A New Generation of Detectors at the Energy Frontier

They discovered the top quark in Run I. Now CDF and DZero are rebuilding their detectors for physics in Run II, with 10 times the luminosity.

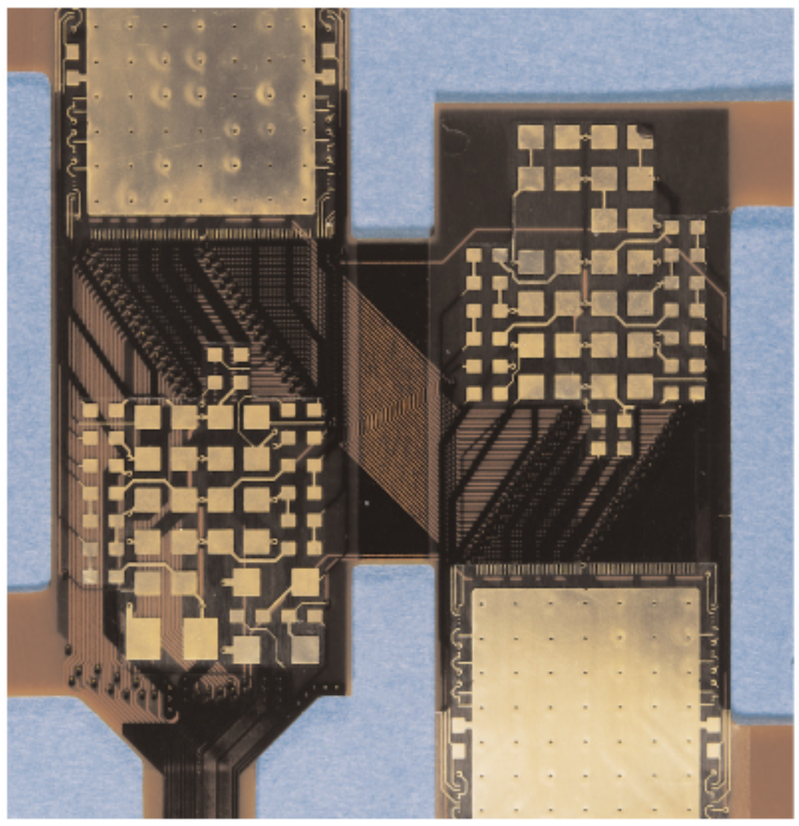


At center stage, inside the central bore of the DZero detector, is a new solenoid magnet, which will significantly extend the experiment's physics capability.

Physicists Nigel Lockyer (left) and Kevin Pitts have worked to improve the performance of the CDF detector's central outer tracker, with new custom integrated circuits.

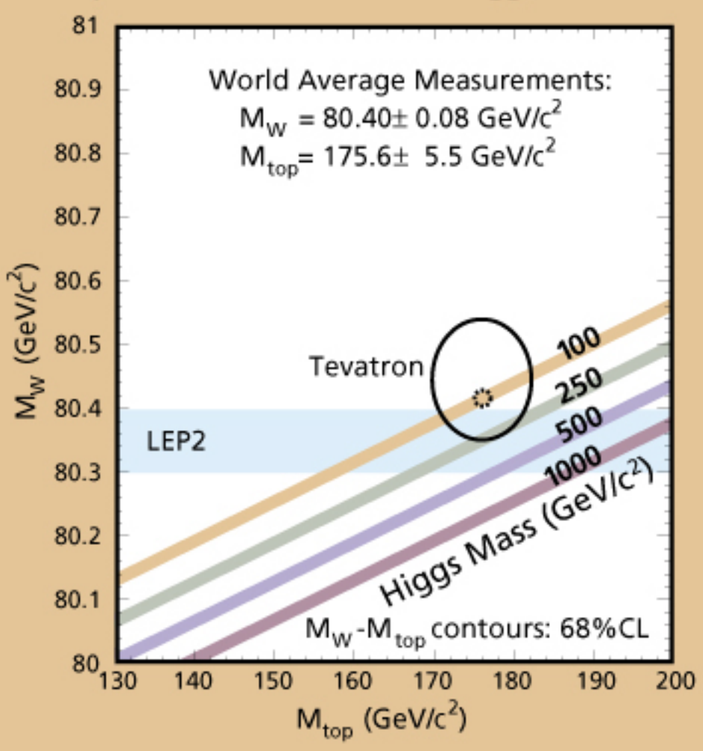


This end plug for the CDF detector will enhance the performance of the entire detector, allowing physicists to study in even more detail the particles of matter, including the top quark.



The CDF and DZero collaborations are both building silicon vertex detectors for Run II. These detectors measure particle trajectories close to the interaction point and are important for the identification of top quarks and b particles.

Top and *W* Masses Constrain Higgs



The top quark and *W* boson masses can be related to the mass of the still unobserved Higgs boson using standard electroweak theory. The large data point shows the current world average values for the mass of the top (from CDF and DZero) versus W mass (from UA2, CDF, DZero, and LEP2). The bands correspond to different values for the mass of the Higgs boson. The small data point indicates the projected uncertainty on the top mass and *W* mass for combined CDF and DZero results at the end of Tevatron Collider Run II with 2 fb^{-1} of data.