

Doctor Hugh Elliot Montgomery

Thomas Jefferson National Accelerator Facility
Glazebrook Medal and prize

For his leadership at the Thomas Jefferson National Accelerator Facility and distinguished research in high-energy physics.

Professor Hugh Montgomery has had a remarkable and distinguished career of scientific achievement and leadership. His successes are noteworthy for the lasting significance of his work as a physicist in the earlier part of his career, and for the way he has successfully led and directed physics at the highest levels internationally in later years.

Montgomery's early research focused on the properties and dynamics of electron-proton interactions. His work contributed towards the experiments that revealed the underlying quark structure and dynamics of hadronic matter. Montgomery joined CERN, where he became spokesperson for the muon-scattering experiment EMC during a period in which it delivered outstanding results that developed understanding of the role of the quark in nucleon matter. Montgomery's contributions to the EMC physics programme were huge, from the design and construction of the experiment to leadership of the whole collaboration.

Montgomery then moved to the US, where he led as co-spokesperson, the D0 collaboration at Fermilab's Tevatron accelerator. During this time he ensured that this experiment competed with – and arguably surpassed – its larger competitor, CDF, by driving the experiment to add a solenoid for a magnetic field with a momentum-sensitive track-detector. Along with CDF, D0 discovered the top quark in the early 1990s and produced many other cutting-edge results that shaped the Standard Model.

Montgomery became research director at Fermilab during the period when the Tevatron alone probed the energy frontier by pushing collider luminosity to unprecedented levels. His leadership led to the publication in 2012 of the confirmatory evidence in support of the discovery by the LHC of the Higgs boson.

In 2008, Montgomery was invited to be director of the Thomas Jefferson National Accelerator Facility in Virginia. He has since led the laboratory while it has established its new electron-hadron programme with a major energy upgrade, which is now beginning its data-taking. Under his stewardship, the laboratory has also taken great strides towards securing the first electron-ion collider for future hadron physics.

He is the first British-born director of a major international accelerator laboratory since Sir Chris Llewellyn-Smith in the mid-1990s, and one of only a handful of British physicists ever to achieve this distinction.

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