

## **Professor Robert Fender: 2020 Herschel Medal**

Professor Fender is a world leader in the field of black hole accretion and jets and has made major scientific contributions to the study of time domain astronomy. His work in understanding the connection between accretion and outflows around compact relativistic objects such as neutron stars and black holes has been transformative. In the early days of the field, the observational properties of X-ray binaries consisted of a rich but poorly understood phenomenology of differing spectra and inferred source properties. Professor Fender's work turned this messy scene into a coherent picture of well-defined disc states and jet production, with key correlations defining the so-called high and low disc states. This model has inspired a generation of theorists to come to grips with the underlying physics of accretion onto black holes and neutron stars. The question of what drives these observed state changes remains an active, incredibly rich field, in which Professor Fender is a key observational player. His work in the wider field of astrophysical transients, from tidal disruption events (the break-up of a star into a gaseous accretion source when it ventures too close to a massive black hole) to the electromagnetic emission from the recently observed neutron-star/neutron-star merger and gravitational wave event has also been extremely influential.

For these reasons, Professor Robert Fender is awarded the Herschel Medal.

Short version:

Professor Fender is a world leader in the field of black hole accretion and jets and his work in understanding the connection between accretion and outflows around compact relativistic objects such as neutron stars and black holes has been transformative. Prof. Fender's work turned a messy observational scene into a coherent picture of well-defined disc states and jet production, and this model has inspired a generation of theorists to come to grips with the underlying physics of accretion onto black holes and neutron stars.