



## Statement of participation

# Rangavaradhan B

has completed the free course including any mandatory tests for:

### Particle physics

This free course provided an overview of current concepts and theories in particle physics.

**Issue date:** 29 June 2024



[www.open.edu/openlearn](https://www.open.edu/openlearn)

This statement does not imply the award of credit points nor the conferment of a University Qualification.  
This statement confirms that this free course and all mandatory tests were passed by the learner.

Please go to the course on OpenLearn for full details:

<https://www.open.edu/openlearn/science-maths-technology/particle-physics/content-section-0>

COURSE CODE: **SM123\_1**

## Particle physics

<https://www.open.edu/openlearn/science-maths-technology/particle-physics/content-section-0>

### Course summary

This free course, Particle physics, will give you an overview of current concepts and theories in the field. You will learn about the fundamental components of matter – known as leptons and quarks – and the composite particles, such as protons and neutrons, which are composed of quarks. You will see that all particle reactions may be described in terms of one of two fundamental interactions, known as the strong and the weak interactions, responsible for binding particles together and allowing them to change type, respectively. This OpenLearn science course was updated with the kind support of Dangoor Education, the educational arm of The Exilarch's Foundation. This OpenLearn science course was updated with the kind support of Dangoor Education340, the educational arm of The Exilarch's Foundation.

### Learning outcomes

By completing this course, the learner should be able to:

- recognise and name the six flavours of lepton and the six flavours of quark.
- understand that all leptons and quarks have corresponding antiparticles
- appreciate that quarks and antiquarks combine to form baryons, antibaryons and mesons.
- write balanced strong interactions, understanding the role of gluons
- write balanced weak interactions, understanding the role of W and Z bosons

### Completed study

The learner has completed the following:

#### Section 1

Particle physics in context

#### Section 2

Leptons

#### Section 3

Quarks

#### Section 4

Hadrons

#### Section 5

High-energy reactions

#### Section 6

Strong interactions

#### Section 7

Beta-decay at the level of quarks and leptons

#### Section 8

Weak interactions

#### Section 9

Conclusion