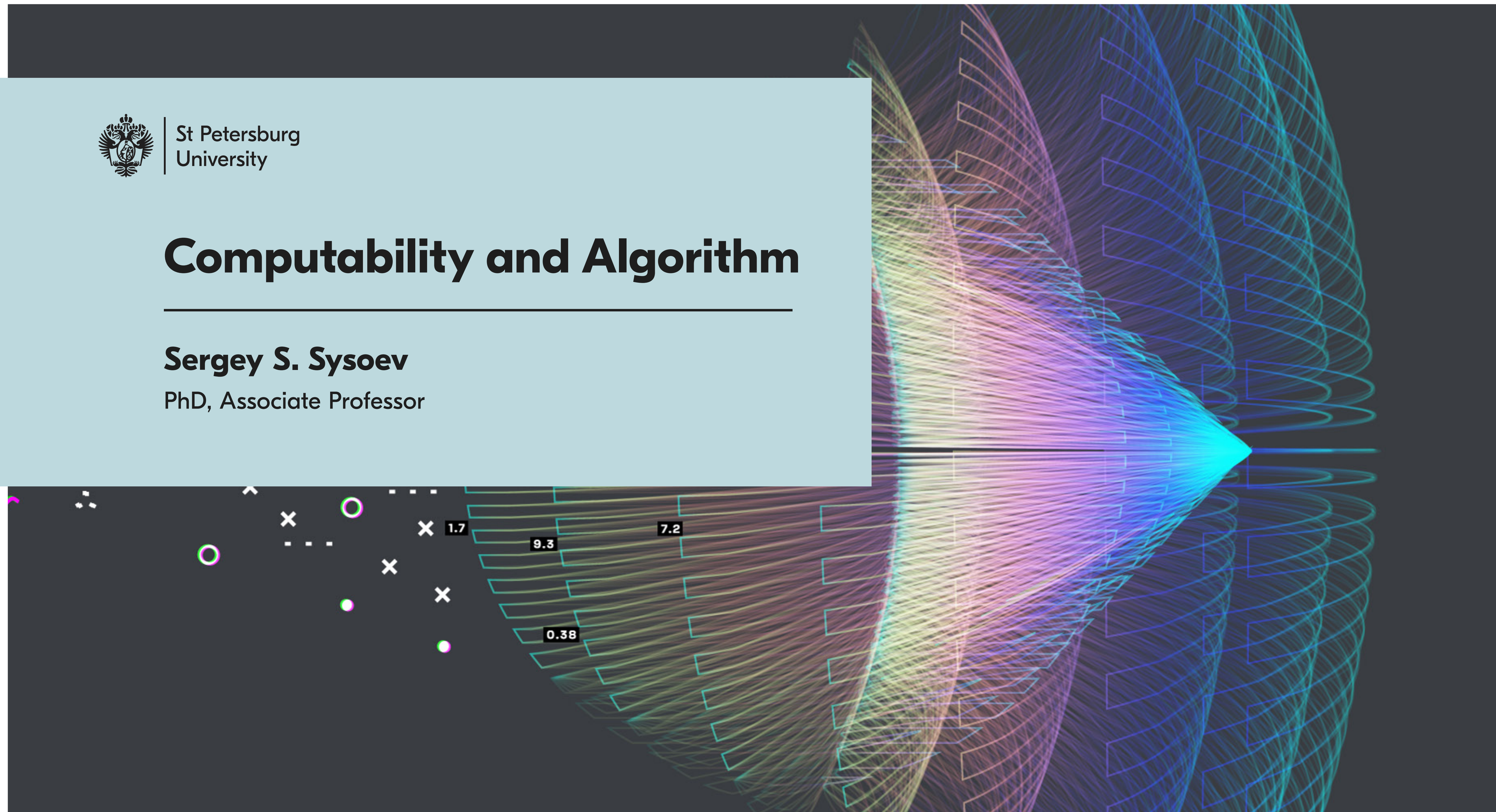St Petersburg University

Computability and Algorithm

Sergey S. Sysoev

PhD, Associate Professor

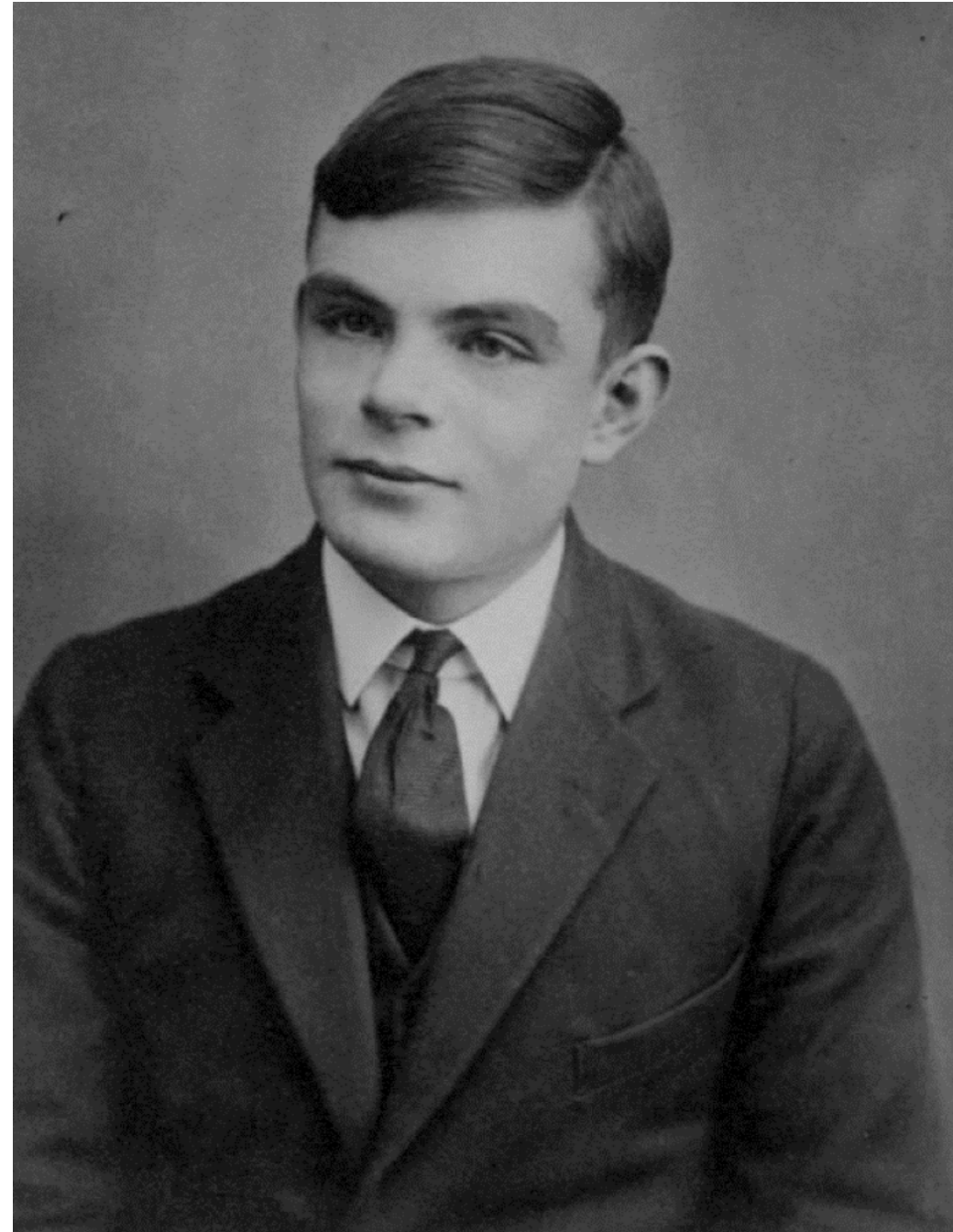# The Goal of Computation — ?

The Goal of Computation —

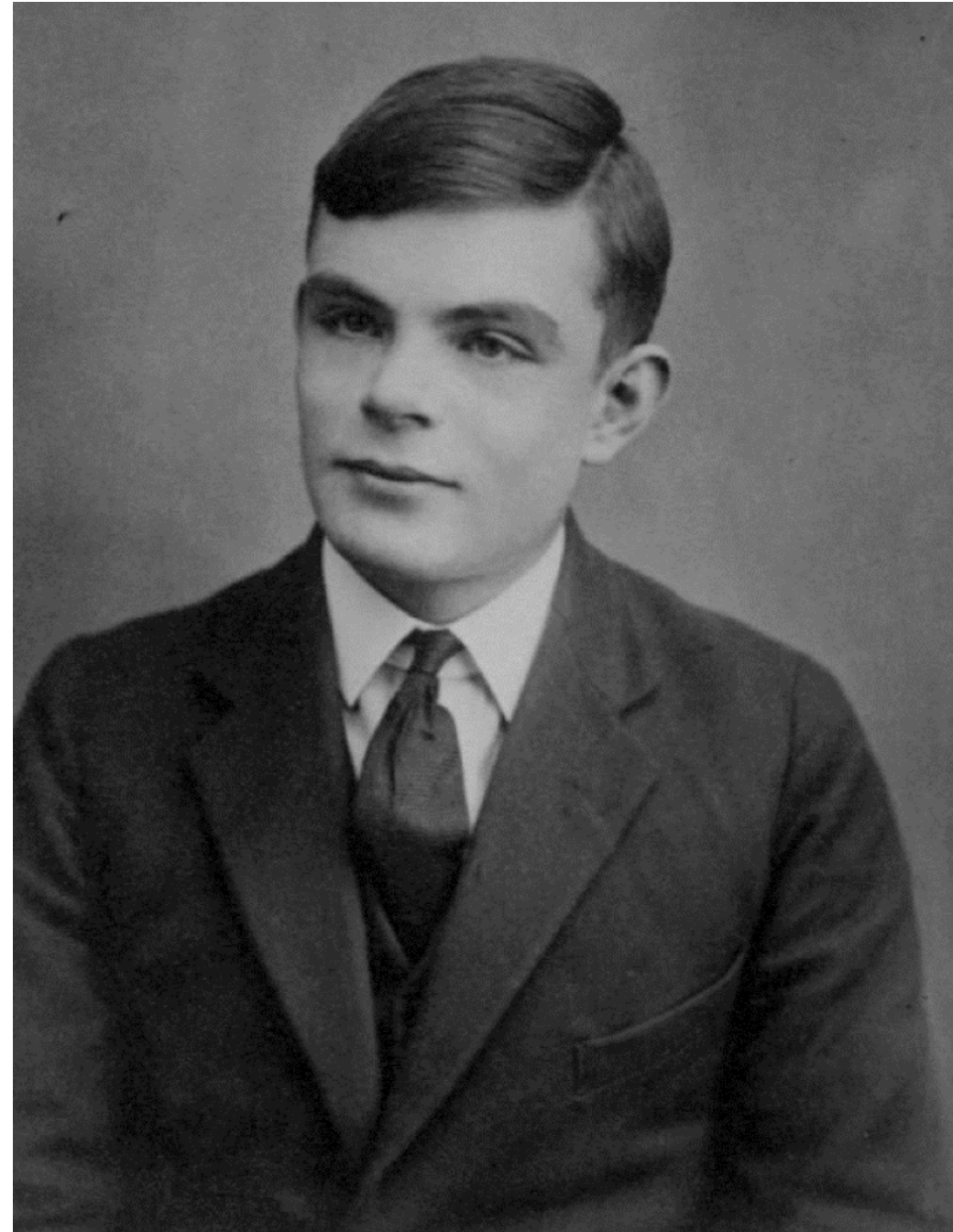— finding the value of some function

Algorithm — ?

Algorithm —

**Alan Turing
(1912—1954)**

- Deterministic Turing Machine (DTM)

Algorithm —

- Deterministic Turing Machine (DTM)

- Church-Turing Thesis

**Alan Turing
(1912—1954)**

Computability

Computability

1 How many algorithms are there?

Computability

1 How many algorithms are there?

2 How many functions are there?

Computability

1 How many algorithms are there?

2 How many functions are there?

3 Uncomputable functions?

Week Plan

- ~~Learning objectives~~

- ~~Computation. Information~~

- ~~Computational system characteristics~~

- ~~The goal of computations. Universality. Algorithm~~

- Computational Complexity

- Quantum computing

- Quantum effects

- The Multiverse interpretation of quantum mechanics

Used materials

1. https://en.wikipedia.org/wiki/Alan_Turing (photo of Alan Turing)

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