

ENCODE Doctoral Network

European Network in Coding Theory and Applications

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für Luft- und Raumfahrt
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The ENCODE Project

Problem: Modern society is heavily dependent on digital technologies. Yet data can be compromised, damaged or disappear due to errors induced by noise, disc failures, untrustworthy servers and malicious cyber-attacks.

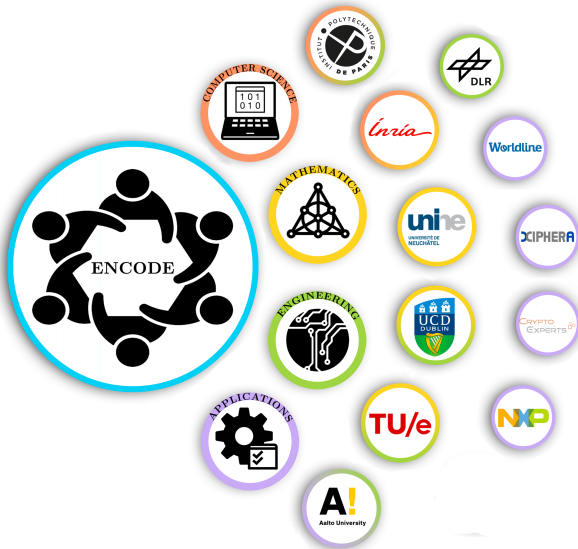
The principal scientific aim of the project is to develop fundamental coding theoretic tools to support a sustainable, trustworthy and resilient digital infrastructure.

- Interdisciplinary topic: mathematics, computer science, engineering
- Applicability: protecting data from noise, mobile communications, cloud storage, secure computation, post-quantum cryptography



The ENCODE Consortium

- Brussels
- Dublin
- Eindhoven
- Helsinki
- Munich
- Neuchatel
- Paris



<https://www.encode-doctoral-network.eu/>
<https://cordis.europa.eu/project/id/101072316>

The ENCODE Doctoral Programme

- We have recruited 8 PhD students at 5 different European academic centres.
- Each doctoral candidate is co-advised by researchers at 2 different universities
- Each PhD does a 6-9-month secondment at a partner university and a 3-month internship with an industry partner.
- ENCODE offers a bespoke training programme for research and professional development.
- Research projects are in combinatorial and algebraic aspects of coding theory.
- Action started in March 2023
- DCs were recruited by Sept/Oct 2023.

- Some of the beneficiaries participated in an **international** COST action (Network Coding and Designs over $GF(q)$).
- **Interdisciplinarity** is inherent to coding theory.
- **Intersectoral** partners connected in different ways:
 - ▶ researchers in industry already known to academic researchers (e.g. postdocs moved to industry)
 - ▶ universities with strong industrial connections (e.g. technical universities)
 - ▶ personal recommendations
- We took a full year to build up the consortium and write the proposal.
- 7 workpackages: 2 research, management, training, impact, industry liaison, EDI.

- This year, several of our DCs are presenting their work at major international conferences:
 - ▶ IEEE International Symposium on Information Theory (ISIT 2025), Michigan, June 2025
 - ▶ SIAM Conference on Applied Algebraic Geometry (AG 25), Wisconsin, July 2025.
 - ▶ 16th International Conference on Post-Quantum Cryptography (PQCrypto), Taipei, April, 2025.
- Several preprints submitted to journals and available on open repositories (e.g. [arXiv.org](https://arxiv.org), eprint.iacr.org/, hal.science)
- Many secondments completed.
- Many communication and public engagement activities.

Being part of a an MSCA doctoral network is very rewarding, on all fronts.

Good luck!