

The CIMPA Course on
 Algebraic and Geometric Methods in Coding Theory, January 27-30, 2024
 School of Mathematics, IPM, Tehran

CIMPA Course Program

| Saturday, January 27, 2024 | | |
|----------------------------|--|--|
| 8:00 - 8:50 | Registration | |
| 8:50 - 9:00 | Opening | |
| 9:00 - 10:30 | Sudhir Ghorpade Indian Institute of Technology Bombay, India | - Linear Codes and Projective Systems - Matroids Associated to Linear Codes |
| Coffee Break | | |
| 11:00 - 12:30 | Mesut Şahin Hacettepe University, Turkey | Affine Toric Varieties |
| Lunch | | |
| 14:00 - 15:00 | Mesut Şahin Hacettepe University, Turkey | How to use Macaulay 2 for Evaluation Codes on Orbit Spaces (tutorial) |
| Coffee Break | | |
| 15:30 - 16:30 | Sudhir Ghorpade Indian Institute of Technology Bombay, India | Tutorial on Linear Codes and Projective Systems |

| Sunday, January 28, 2024 | | |
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| 9:00 - 10:30 | Sudhir Ghorpade Indian Institute of Technology Bombay, India | Projective Reed-Muller Codes |
| Coffee Break | | |
| 11:00 - 12:30 | Mesut Şahin Hacettepe University, Turkey | Projective Toric Varieties |
| Lunch | | |
| 14:00 - 15:00 | Mesut Şahin Hacettepe University, Turkey | How to Use Macaulay 2 for Codes on Projective Toric Varieties (tutorial) |
| Coffee Break | | |
| 15:30 - 16:30 | Sudhir Ghorpade Indian Institute of Technology Bombay, India | Tutorial on Reed-Muller and Projective Reed-Muller Codes |

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| Monday, January 29, 2024 | | |
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| 9:00 – 10:30 | Sudhir Ghorpade Indian Institute of Technology Bombay, India | Grassmann and Schubert Codes |
| Coffee Break | | |
| 11:00 - 12:30 | Mesut Şahin Hacettepe University, Turkey | Fans and Abstract Normal Toric Varieties |
| Group Photo and Lunch | | |
| 14:00 – 15:30 | Omran Ahmadi IPM, Iran | Code-Based Cryptography |
| Excursion (Visiting Time Museum)* | | |
| *Those who are interested send an email with subject "Time_Museum" to "ipmcommalg@ipm.ir" before January 27th. | | |

| Tuesday, January 30, 2024 | | |
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| 9:00 – 10:30 | Sudhir Ghorpade Indian Institute of Technology Bombay, India | Betti Numbers of Linear Codes and Matroids |
| Coffee Break | | |
| 11:00 - 12:30 | Mesut Şahin Hacettepe University, Turkey | Homogeneous Coordinates and GIT Quotient Representation |
| Lunch | | |
| 14:00 – 15:00 | Mesut Şahin Hacettepe University, Turkey | How to use Macaulay 2 for Codes on Normal Toric Varieties (tutorial) |
| Coffee Break | | |
| 15:30 - 16:30 | Sudhir Ghorpade Indian Institute of Technology Bombay, India | Tutorial on Grassmann and Schubert Codes |
| 16:45 – 17:45 | Free Discussion | |

Please note that 3 tutorials are devoted to computations made in the software system Macaulay 2. You may bring your personal computers having this software installed or you may use the online web server at:

<https://www.unimelb-macaulay2.cloud.edu.au/#home>

You can see the information related to the course on the below website:

https://math.ipm.ac.ir/conferences/2024/19th_comalg

