National Institute of Technology Rourkela

## Departmental Seminar

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| Seminar Title | : Design and experimental validation of STAR-optical RIS prototype in underwater optical wireless communication. |
| Speaker | : Prof. Ramavath Prasad Naik |
| Supervisor | : Prof. Anirban Bhowal |
| Venue | : EC303, Seminar Room |
| Date and Time | : 01 Jul 2025 (12.00 Noon) |
| Abstract | : Mission-critical applications in underwater commu nication need to handle data transfer with high reliability and low latency. Moreover, coverage of a large number of underwater sensors gains significance in harsh aquatic environments. These goals can be fulfilled by deploying simultaneously transmitting and reflecting optical reconfigurable intelligent surface (STAR ORIS), which can enhance the coverage, reliability, and security. However, data broadcasting in underwater optical wireless com munication (UOWC) by deploying STAR-ORIS remains a concern since optical signals are highly directional. Hence, we propose a multiple STAR-ORIS aided UOWC system, for which we perform design of a STAR-ORIS prototype and conduct experimental validation of the broadcasting system in terms of bit error rate (BER). The experimental results reveal that the proposed system requires only half or less than half of the transmit power to achieve the same BER performance as that of a single STAR ORIS-aided UOWC system. |