Digitale
Kommunikationssysteme

RUB

Reconfigurable Intelligent Surfaces (RIS) for next generation wireless networks

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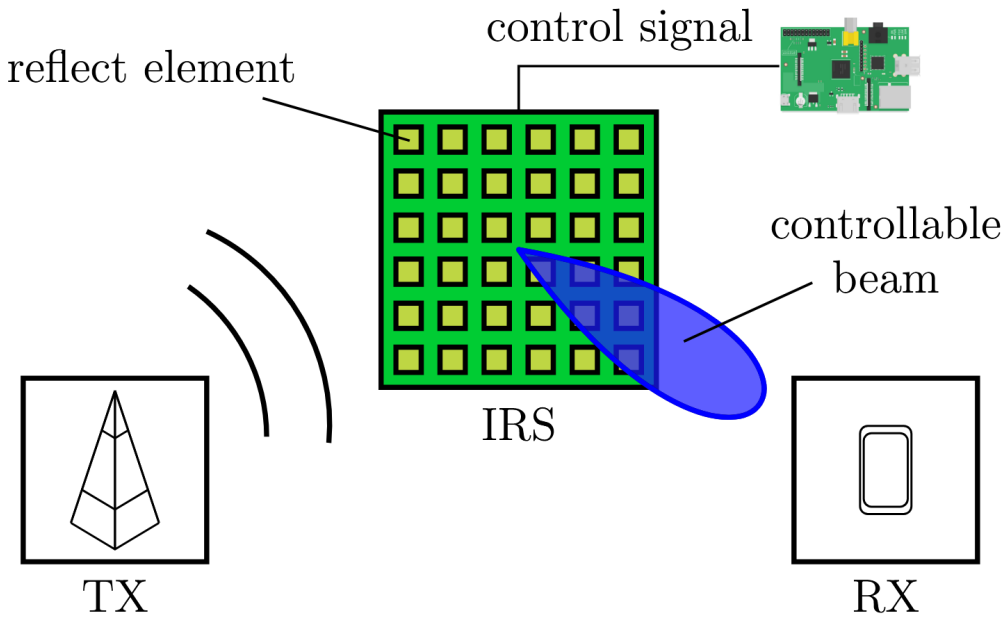
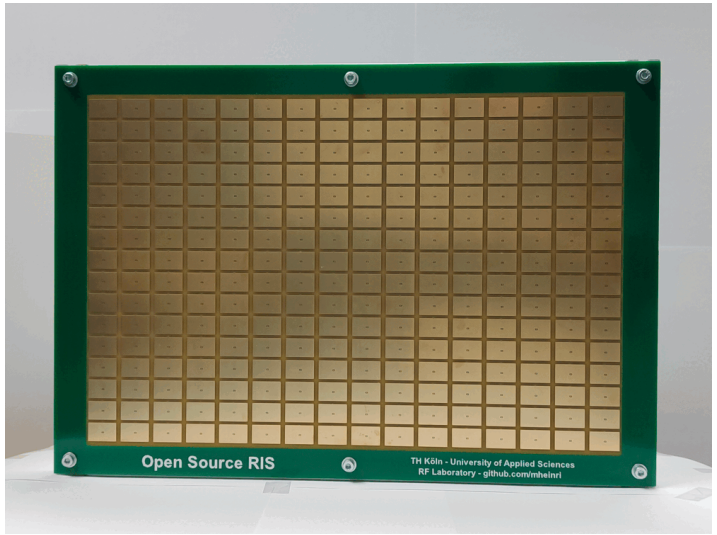
Reconfigurable Intelligent Surfaces

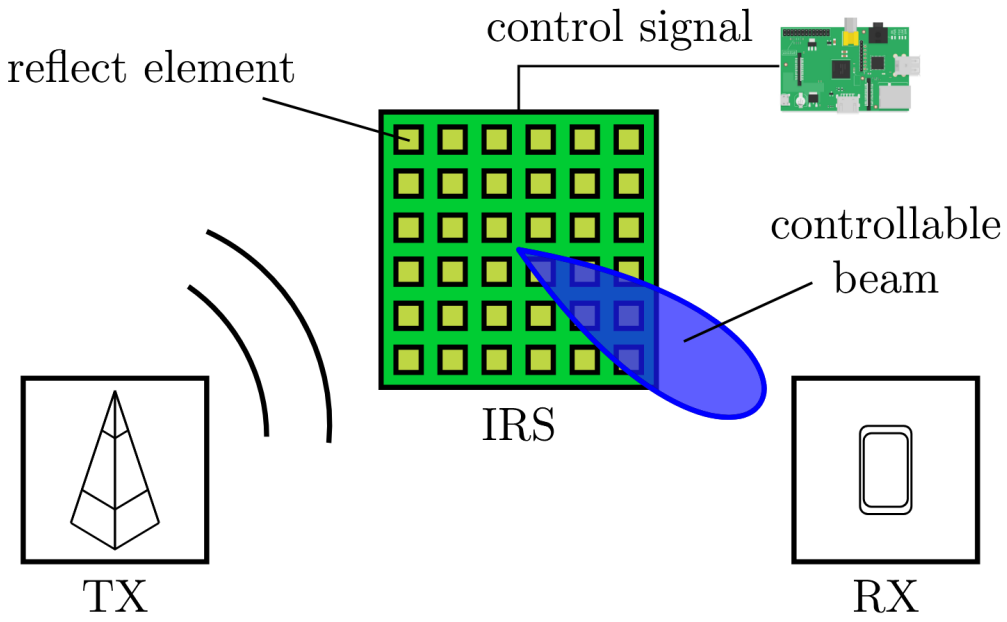
- A thin surface consisting of passive scattering elements that can be controlled by a low-cost electronic circuit
- Key idea: Reflect the incoming signal to the desired destination
- RIS-assisted systems can achieve high spectral and energy efficiency at low cost



Use cases for Reconfigurable Intelligent Surfaces

- obfuscation from wireless sensing,
- security from jamming,
- coverage extension, fast recovery of communication networks with UAV-mounted RIS to bridge distances.
- And many more…

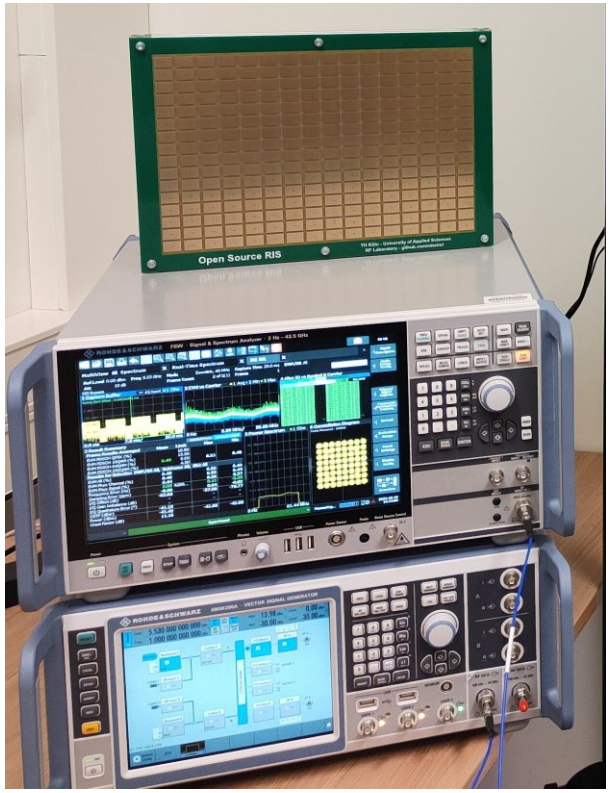




Partners sought

- Industrial partners
  - Fabrication of RIS in large scale,
  - Adaptors /implementation in various uses cases
  - standardization involvement

- Scientific partners
  - Research institutes with RF design expertise
  - Deep learning (RL) based approaches for RIS



Current research projects

- Research Focus:
  - 6G research
  - Reconfigurable Intelligent Surfaces (RIS)
  - Physical Layer Security
  - Terahertz
  - Non-destructive testing

- Research Projects:
  - Projects with industry (6GEM, 6G-ANNA)
  - Several DFG (German Research Foundation) projects (SFB/TRR196 – MARIE, CASA)
  - Terahertz.NRW
  - EU: WINNER

6GEM

6G-ANNA

marie SFB/TRR 196

Digital Communication Systems

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