

# Digital Longitudinal Performance Monitoring of Coherent Optical Links

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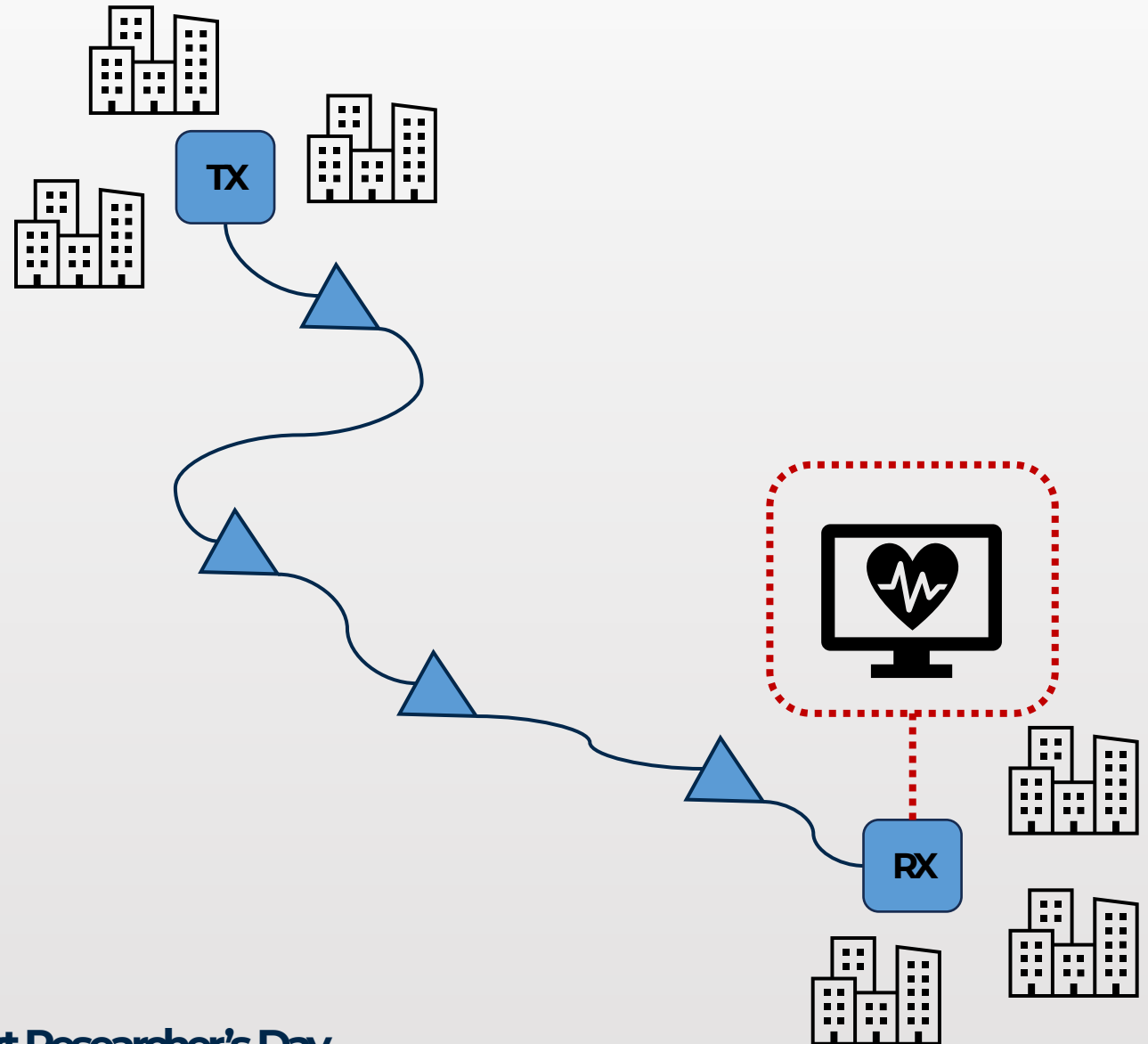
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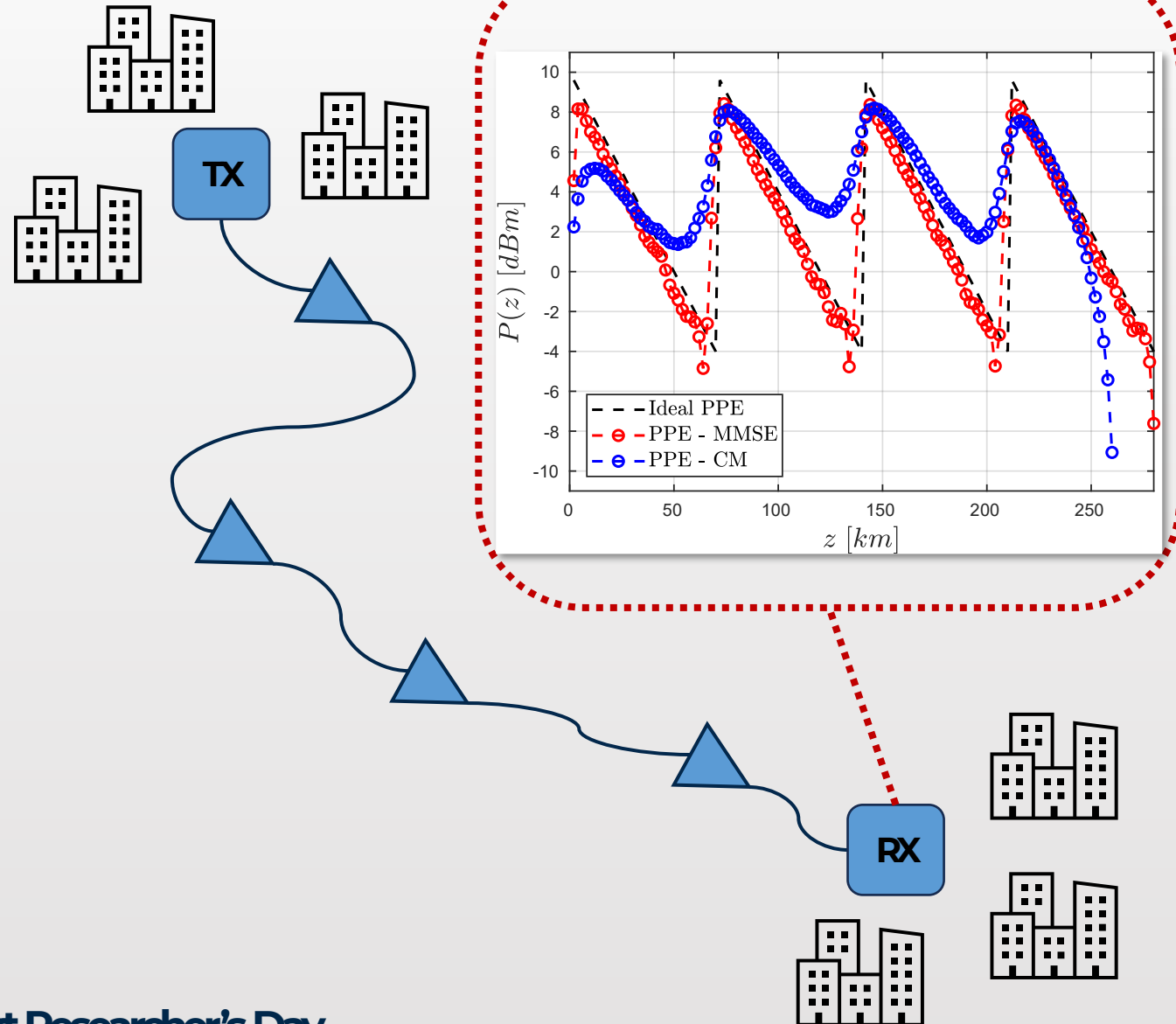
# What is longitudinal performance monitoring?

- «**Longitudinal**»: parameters identification in the direction of propagation.
- Digital «**Performance Monitoring**»: digital signal processing techniques for **health monitoring** of optical transmission systems.



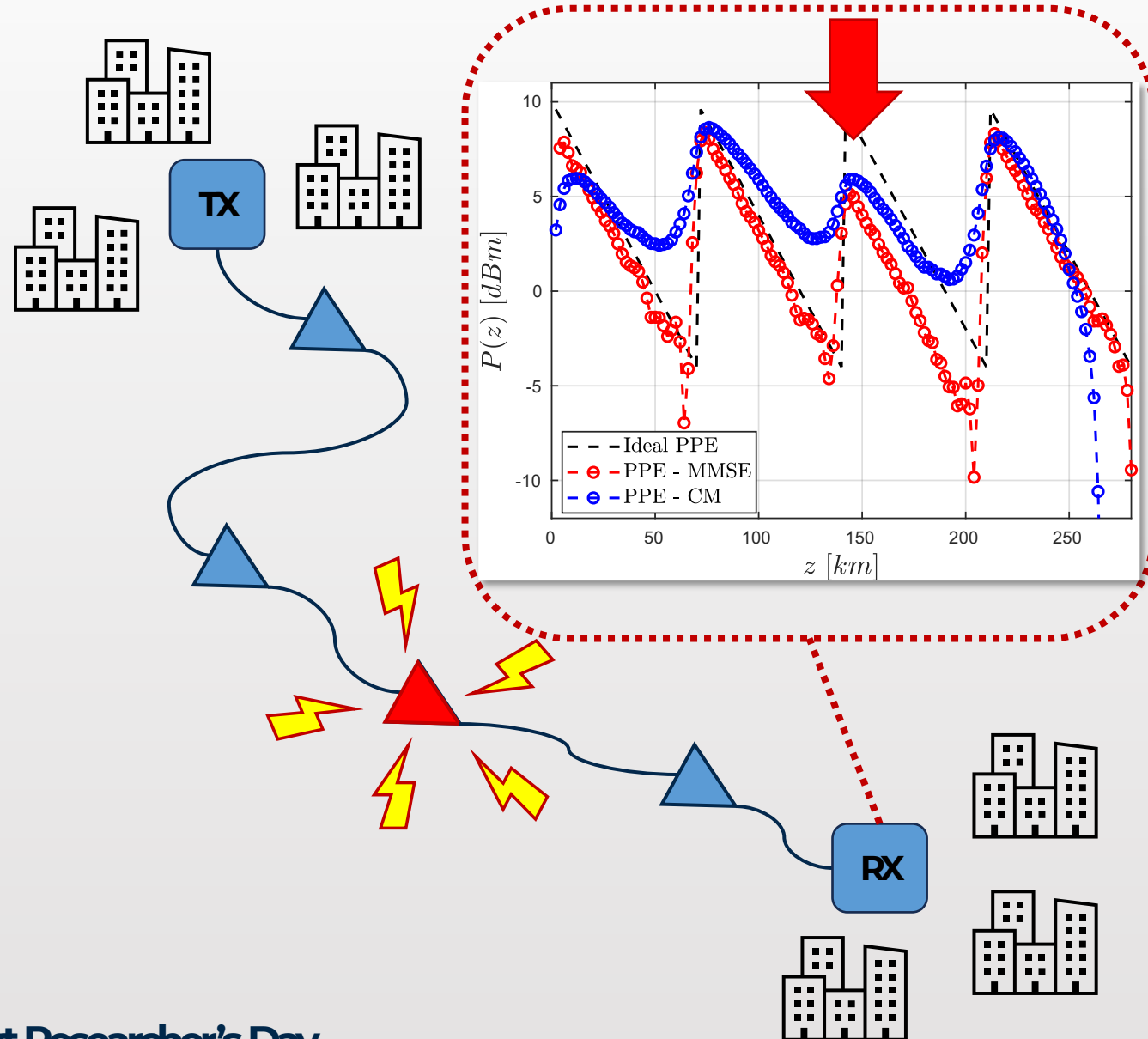
# An example: longitudinal power monitoring (LPM)

- **Monitoring** of the evolution of the **signal power** over the optical link.
- Two main approaches:
  1. **MMSE-based** method
  2. **Correlation** method



# What if a problem occurs?

- Problems may occur at some point in the system, e.g., a **huge power loss**.
- **Spatial localization** is made possible by LPM!



# Why digital LPM?

## Pros:

- No need for **external analog measuring devices** (OTDRs, OSAs ...)
- Reduction in **CAPEX** and **OPEX**
- «**Smarter**» optical transmission systems

## Cons:

- Highly dependent on the **transmitted power**
- Reduced performance in **typical communication scenarios**

**Thank you for your  
attention!**