Serial Peripheral Interface
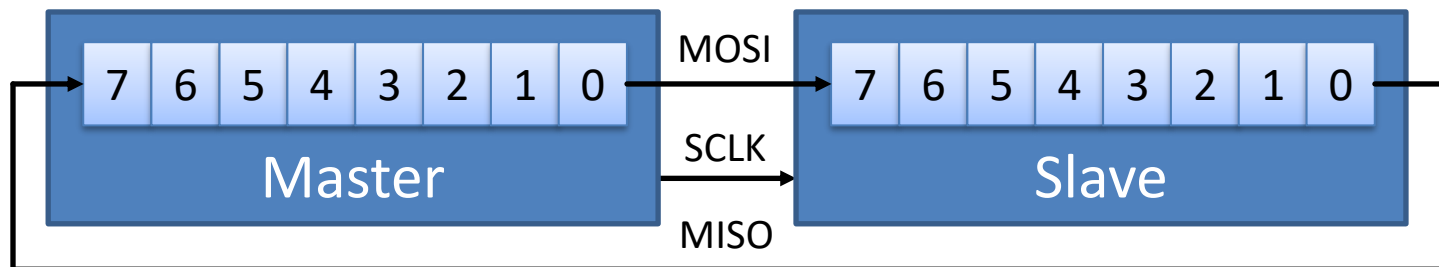
Networks and Embedded Systems

Second Grade Level

Wolfgang Neff

SPI (1)

- Operation
  - Master controls synchronous communication
  - Two shift register form a circular buffer
  - Master shifts data to slave via MOSI
  - Slave shifts data to master via MISO

SPI (2)

- Addressing
  - Point-to-point connection
  - Several slaves possible
  - Slave select
    - Control line
    - Active low
    - Activates slave
    - Just one slave active
    - The other must be inactive
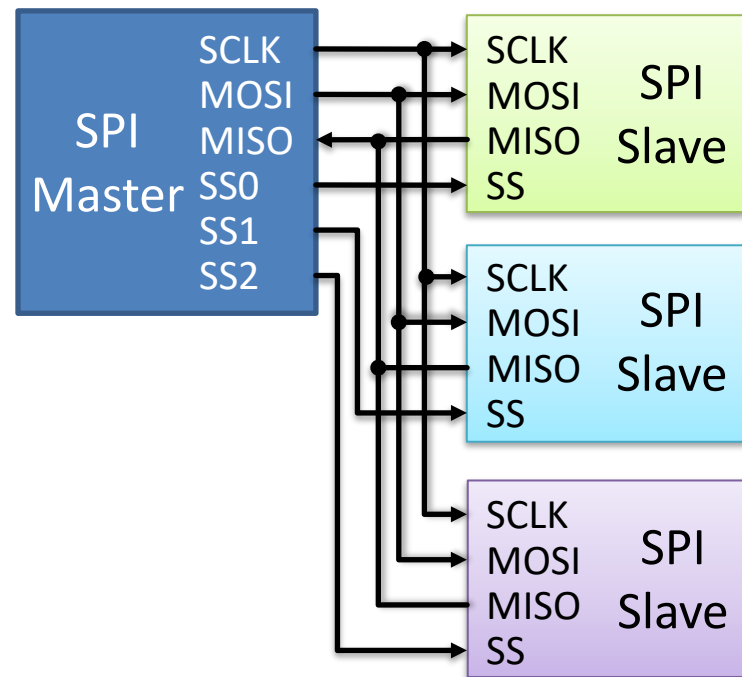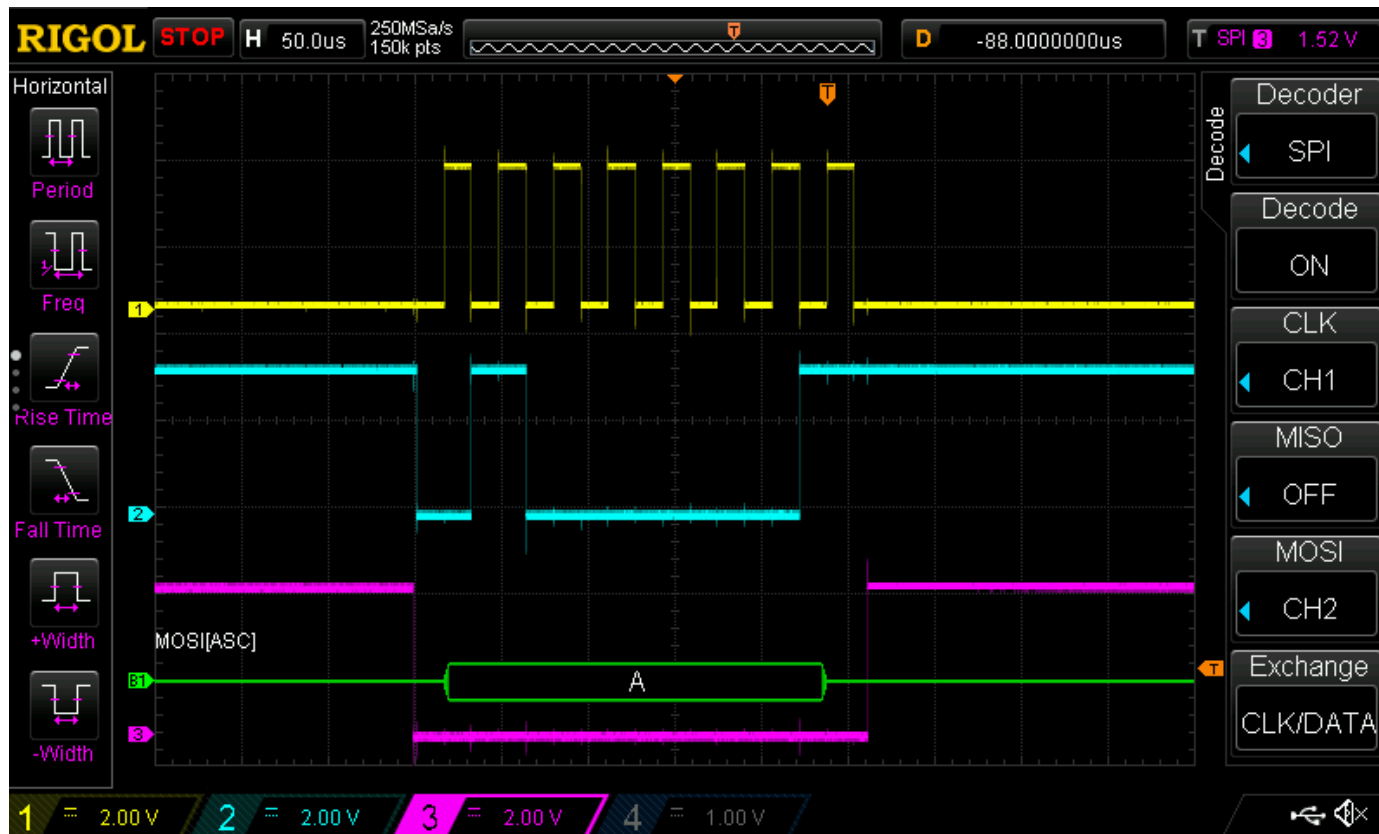
SPI (3)

- Three-state logic
  - Third state in addition to *0* and *1*
  - Remove devices from circuit
    - High impedance
      - High resistance → insignificant current
  - State table

State	
0	Low
1	High
Z	High impedance

SPI (4)

- Real-Life Example

SPI (5)

- Advantages
  - Simple software implementation
  - Extremely simple hardware interface
  - Full duplex communication
  - High throughput

SPI (6)

- Disadvantages
  - No formal standard available
  - Requires more pins than other protocols
  - Extra lines due to the lack of addressing protocol
  - No error checking by protocol
  - Handles short distances, only