

# DISI – UNIVERSITY OF TRENTO

Master in Computer Science AA 2014/2015

Simulation and Performance Evaluation

## Simulation of a simple queuing network

Configuration for Martino Ciresa

### Arrival Process

Customers arrive in pairs following a Rayleigh distribution with  $\sigma = 4$ , i.e., the interarrival times of a pair customers are i.i.d. RV that follows the law

$$f_{IT} = \frac{t}{\sigma^2} e^{-\frac{t^2}{2\sigma^2}}; \quad t \geq 0; \quad \sigma = 4$$

After their arrival customers are completely independent and behave without any relation to each other.

### Stations

QS1: -/G/1/10/LIFO; the service time is uniformly distributed between 1 and 3.

QS2: -/G/4/20/FIFO; the service time (for each server) is uniformly distributed between 0 and 40.

QS3: -/M/1/ $\infty$ /FIFO; average service rate  $\mu = 0.25$ .

### Routing probabilities

$p_{i,j}$  is the probability that a customer services in queue  $i$  goes to queue  $j$ .

		j		
		1	2	3
i	1	0.0	0.2	0.6
	2	0.1	0.1	0.8
	3	0.0	0.0	0.0
		$p_{ij}$		