Technical Student Programme: Mars 2020 – July 2020

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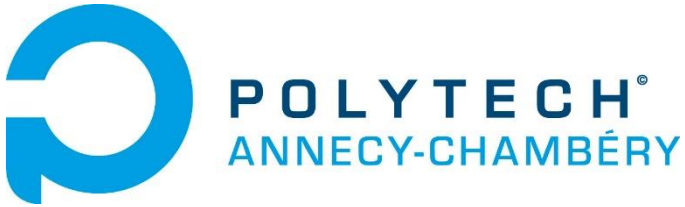
Supervisor: Andrea Apollonio

Argentina


OCEANO ARTICO
AMERICA DEL NORTE
EUROPA
ASIA
OCEANO PACIFICO NORTE
OCEANO ATLANTICO NORTE
AFRICA
OCEANO PACIFICO NORTE
AMERICA DEL SUR
OCEANO INDICO
OCEANIA
OCEANO ATLANTICO SUR
OCEANO PACIFICO SUR
ARGENTINA
ANTARTIDA

Academic Background

Currently: Mechatronical Engineering



IT Automation Instrumentation Engineering;
6 months stay in France

Internship

Projects

UNCUYO
UNIVERSIDAD NACIONAL DE CUYO

Master Thesis: Design and programming an automatic wheelchair. Two wheeled robot equipped with sensors, navigation system and obstacle avoidance

POLYTECH
ANNECY-CHAMBÉRY

Research and Developement Project: Internet of Things. Connected room. Instrumented furniture and sofas. VideoGame control with human weight.

CERN

Reliability and availability analyses of CERN accelerators:

→ AvailSim4 development (In collaboration with software team)
→ Analysis of QPS (failure probability using PM Database)
→ Analysis of LHC and injectors failure data from AFT

AvailSim4 development

Monte-Carlo algorithm + Discrete Event Simulation (DES)

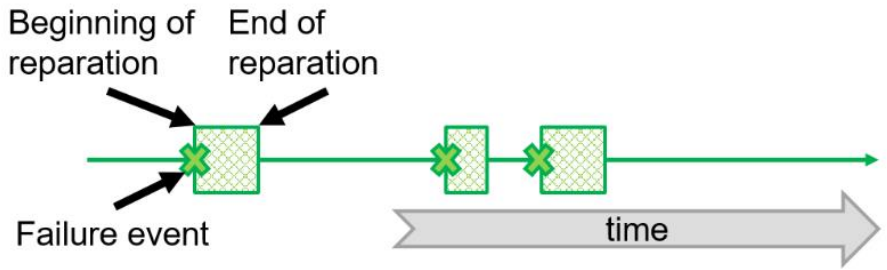
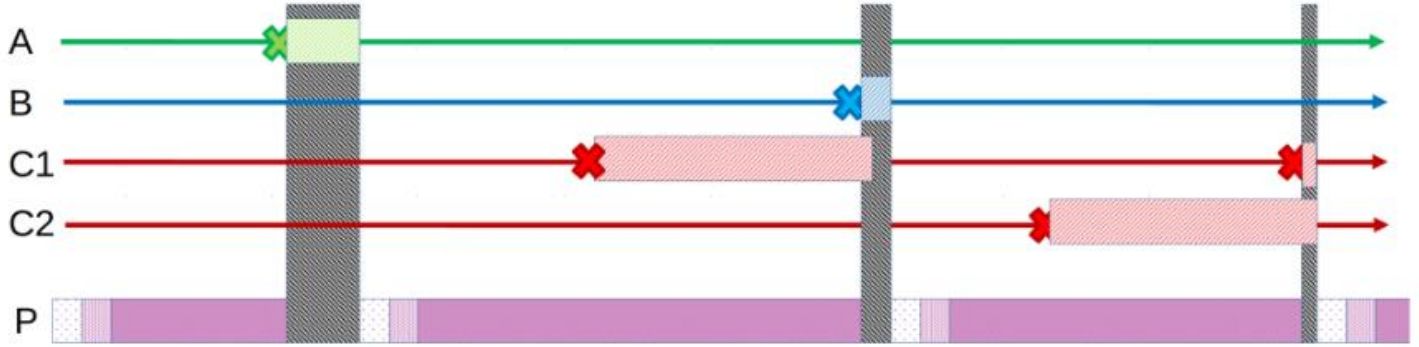
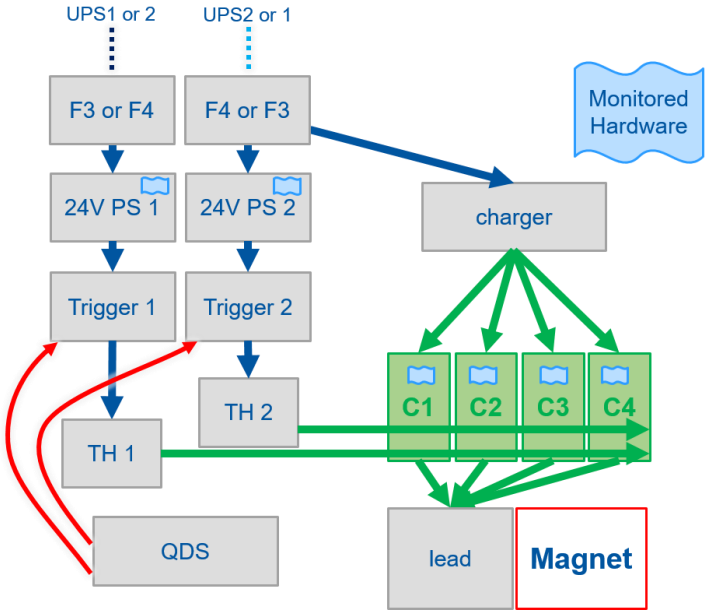


Figure 2: Example of a timeline.

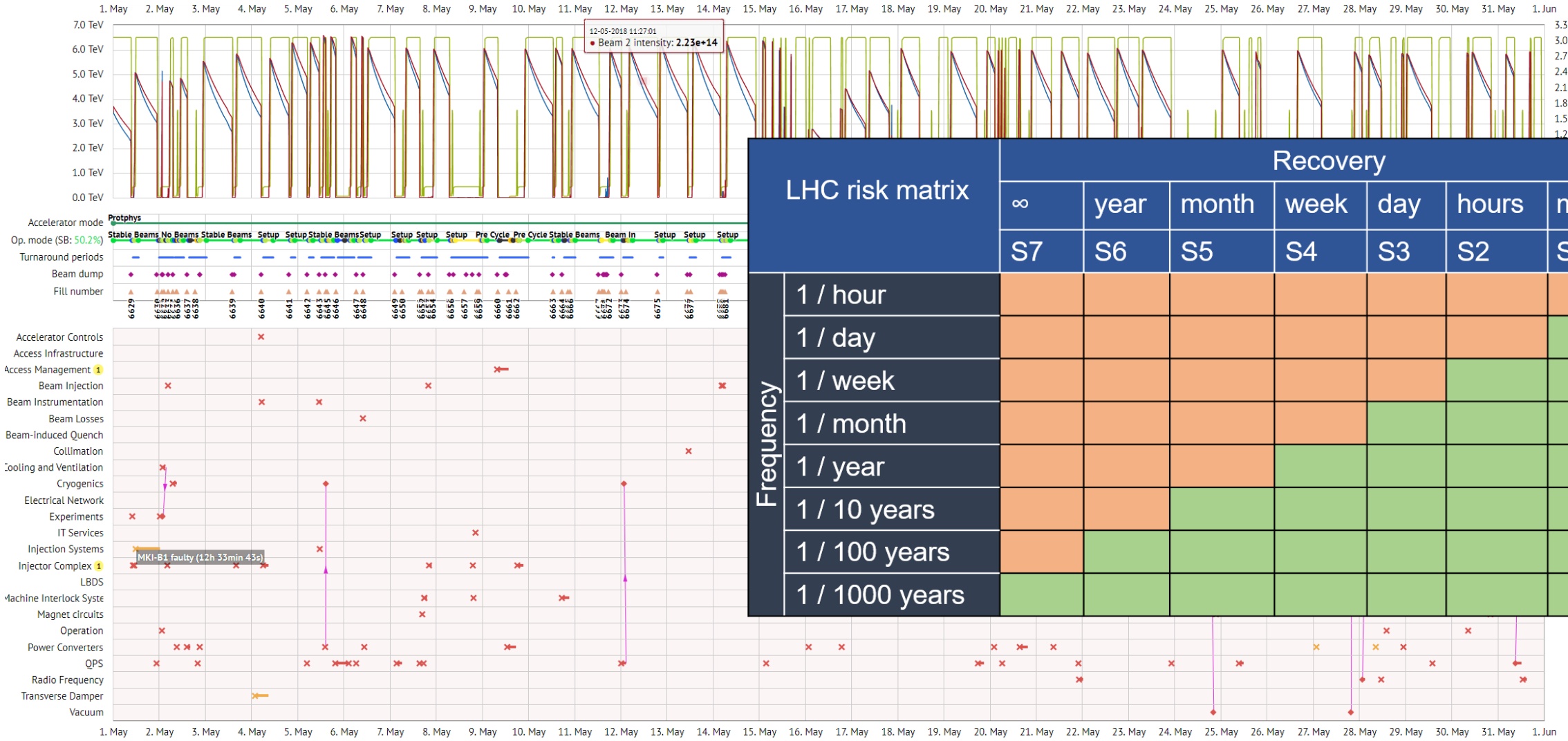


Data mining with Post-Mortem data

Quench Detection System
Failure rate



AFT – Accelerator Fault Tracking



LHC risk matrix		Recovery						
		∞	year	month	week	day	hours	minutes
		S7	S6	S5	S4	S3	S2	S1
Frequency	1 / hour							
	1 / day							
	1 / week							
	1 / month							
	1 / year							
	1 / 10 years							
	1 / 100 years							
	1 / 1000 years							

Defining acceptable failure rate

LHC risk matrix		Recovery						
		∞	year	month	week	day	hours	minutes
		S7	S6	S5	S4	S3	S2	S1
Frequency	1 / hour							
	1 / day							
	1 / week							
	1 / month							
	1 / year							
	1 / 10 years							
	1 / 100 years							
	1 / 1000 years							

Relation between failure duration and failure frequency
LHC and injectors

Outside CERN

www.cern.ch