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MINISTERIO  
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Plan de Recuperación,  
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AGENCIA  
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# TileCal/TDAQ End of Year Meeting

**Héctor Gutiérrez**

Instituto de Física Corpuscular (CSIC-UV)

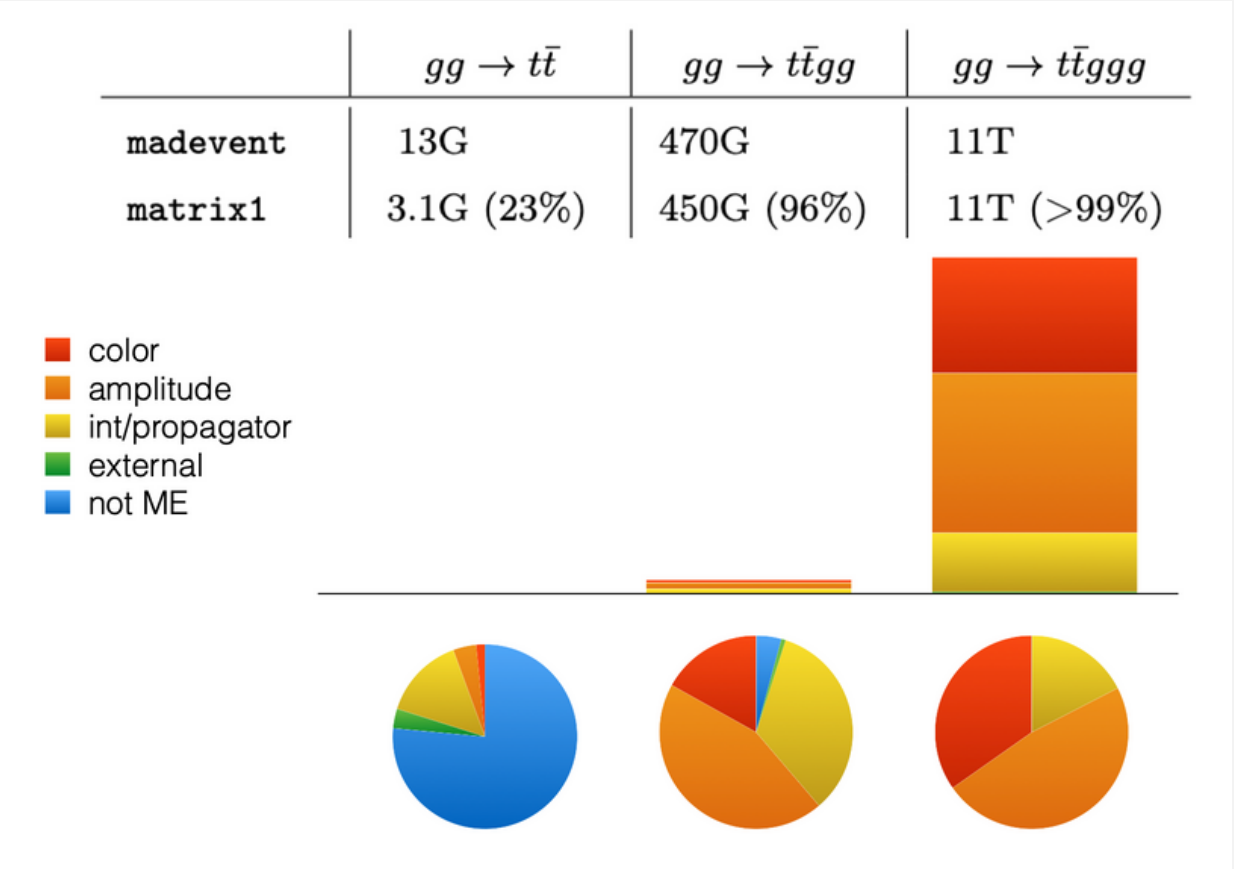
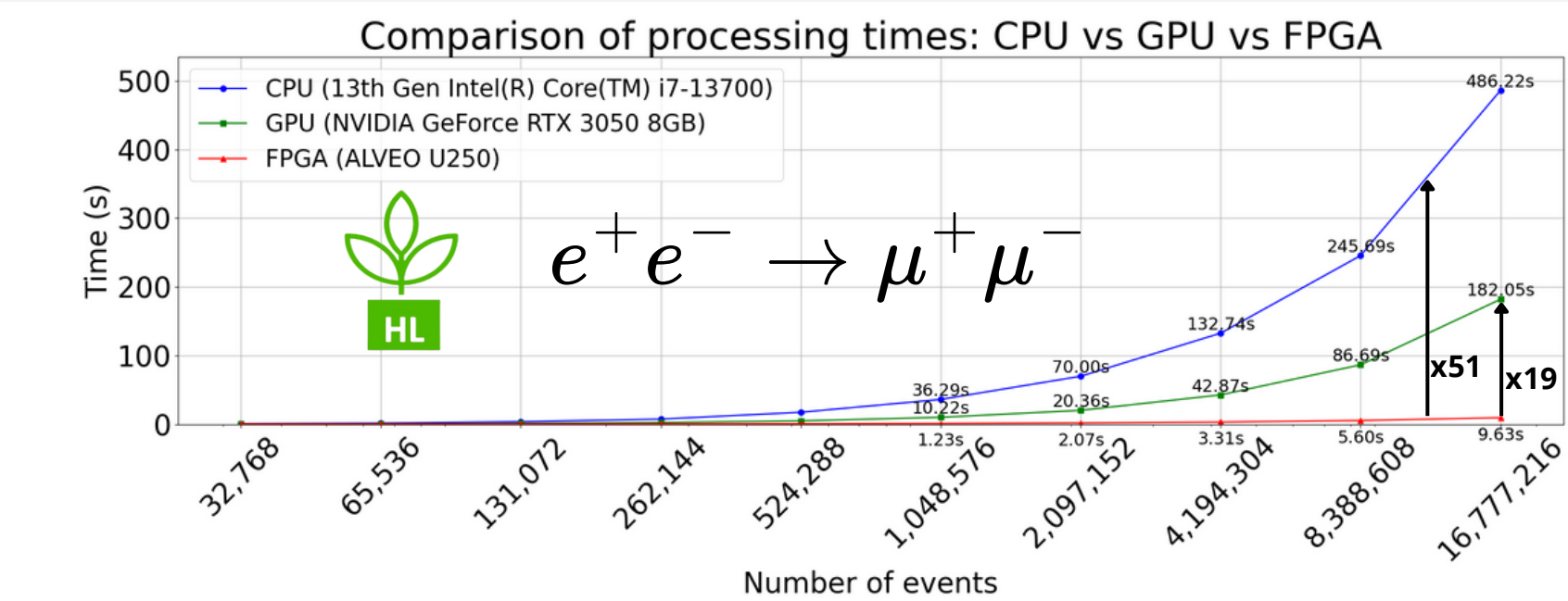
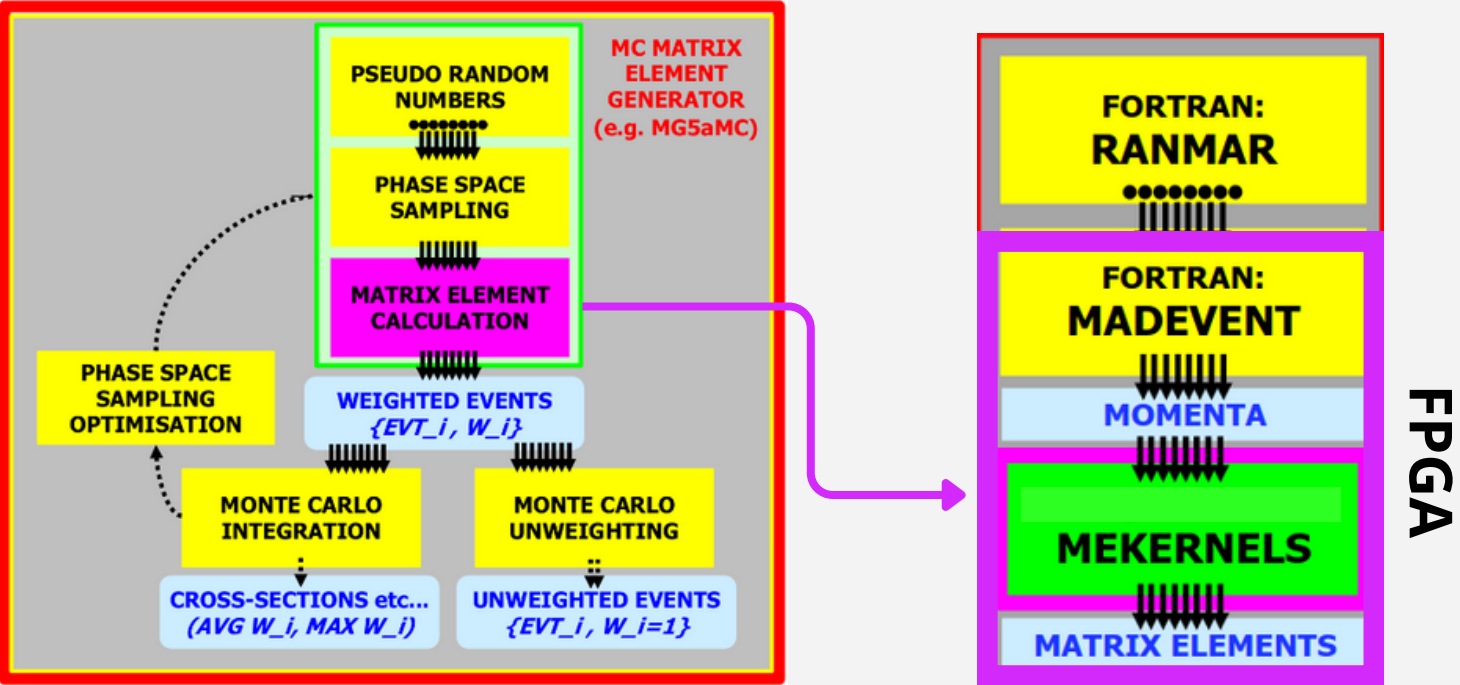
16th July



**Contact:**

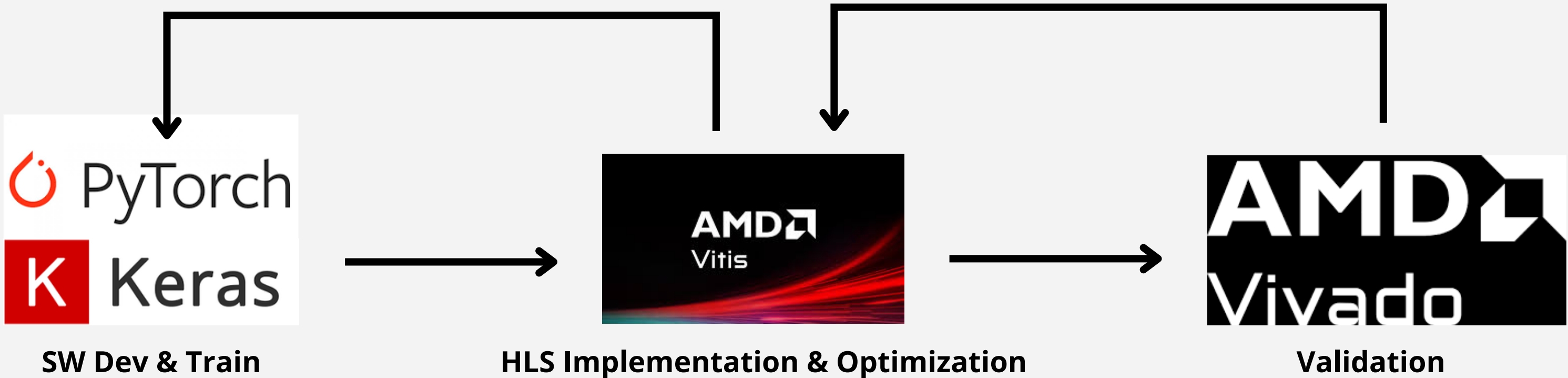
**Hector.Gutierrez@ific.uv.es**

# MADGRAPH FPGA



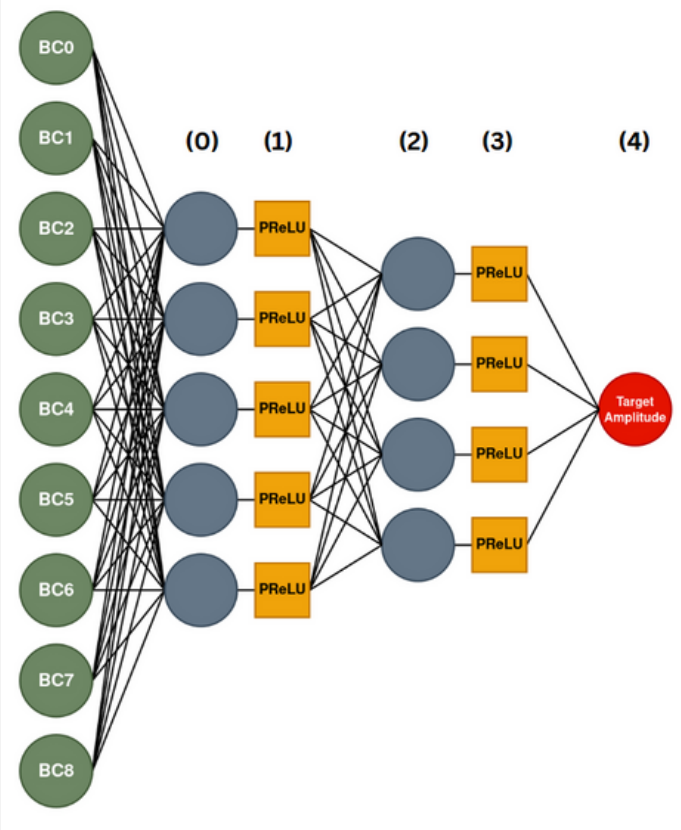
| Process     | tCPU/evt (ns) | tFPGA/evt (ns) | tFPGA_ideal (ns) |
|-------------|---------------|----------------|------------------|
| gg → tt~g   | 24            | 13             | 10               |
| gg → tt~gg  | 120           | 16             | 10               |
| gg → tt~ggg | 4400          | 2500           | 10               |

# SIGNAL RECO FPGA



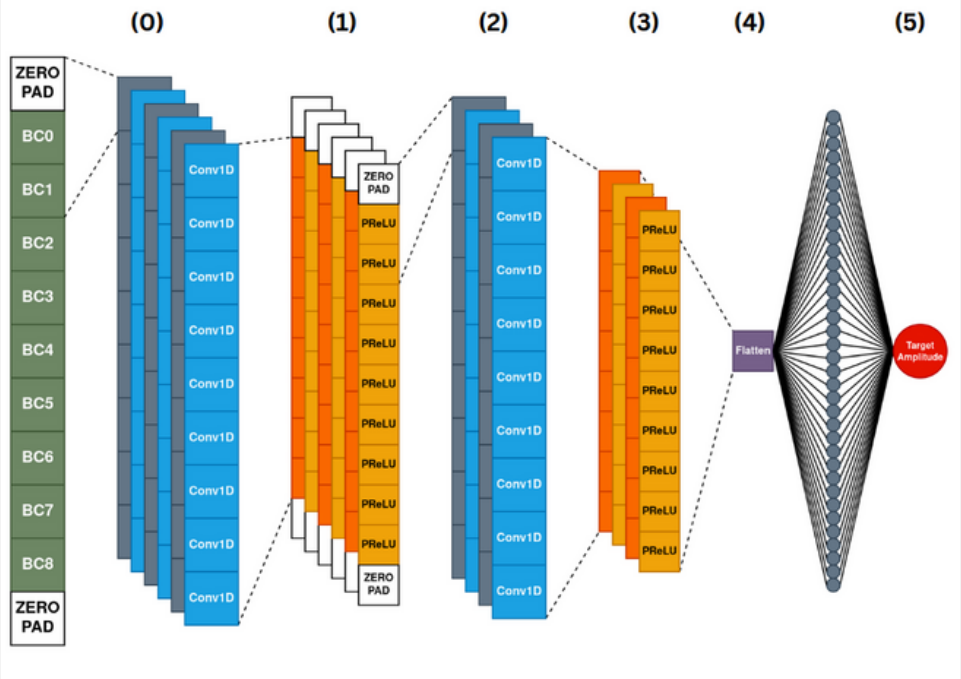
++++  
Model type: MLP  
Cells: A1  
Window size: 9  
Loss: hybrid  
Date: 2025-05-27  
Time: 11:03:55  
Parameters: 148  
++++

Sequential(  
(0): Linear(in\_features=9, out\_features=9, bias=True)  
(1): PReLU(num\_parameters=9)  
(2): Linear(in\_features=9, out\_features=4, bias=True)  
(3): PReLU(num\_parameters=4)  
(4): Linear(in\_features=4, out\_features=1, bias=True)  
)



++++  
Model type: CNN  
Cells: A1  
Window size: 9  
Loss: hybrid  
Date: 2025-05-29  
Time: 15:45:56  
Parameters: 147  
++++

Sequential(  
(0): Conv1d(1, 6, kernel\_size=(3,), stride=(1,), padding=(1,))  
(1): PReLU(num\_parameters=6)  
(2): Conv1d(6, 4, kernel\_size=(3,), stride=(1,), padding=(1,))  
(3): PReLU(num\_parameters=4)  
(4): Flatten(start\_dim=1, end\_dim=-1)  
(5): Linear(in\_features=36, out\_features=1, bias=True)  
)



# Conferences & Paper



*particles*

an Open Access Journal by MDPI

## Porting MADGRAPH to FPGA Using High-Level Synthesis (HLS)

Héctor Gutiérrez Arance; Luca Fiorini; Alberto Valero Biot; Francisco Hervás Álvarez; Santiago Folgueras; Carlos Vico Villalba; Pelayo Leguina López; Arantza Oyanguren Campos; Valerii Kholoimov; Volodymyr Svintozelskyi; Jiahui Zhuo

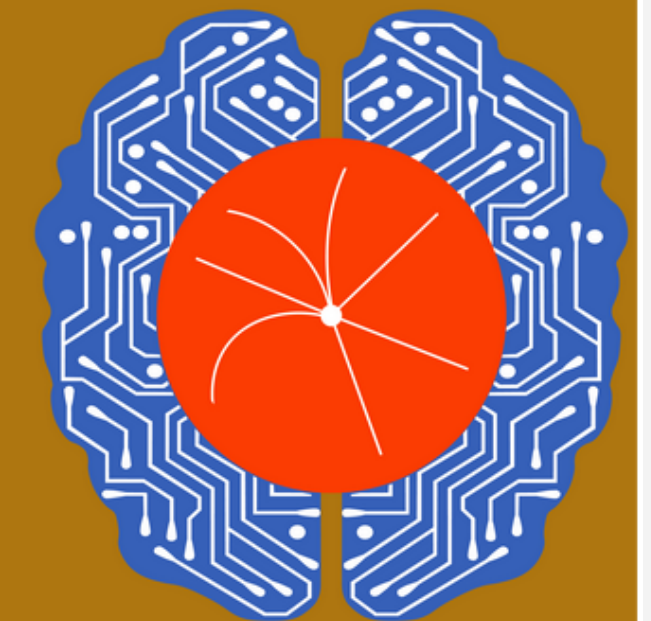
*Particles* **2025**, Volume 8, Issue 3, 63



1-5 September 2025

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