Gain corrections in the (g-2) calorimeters

Elia Bottalico & Pau Petit Rosas

- Omega is affected by changes of the phase over time, understanding of these are key for succes!
- A cut on the energy is necessary to have a clear signal, but the energy's reading need to be precise.
- Electronic limitations have to be taken into account:
    - Calorimeters are affected by initial splash of particles and pile up.
    - The effect can be understood via laser measurements, resembling the positron interactions, the in-fill gain correction.
    - A gain function is measured and can be applied to every positron.

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$$cos(\omega_a t + \phi(t)) = cos(\omega_a t + \phi_0 + \phi' t + ...)$$
$$= cos((\omega_a + \phi')t + \phi_0 + ...)$$

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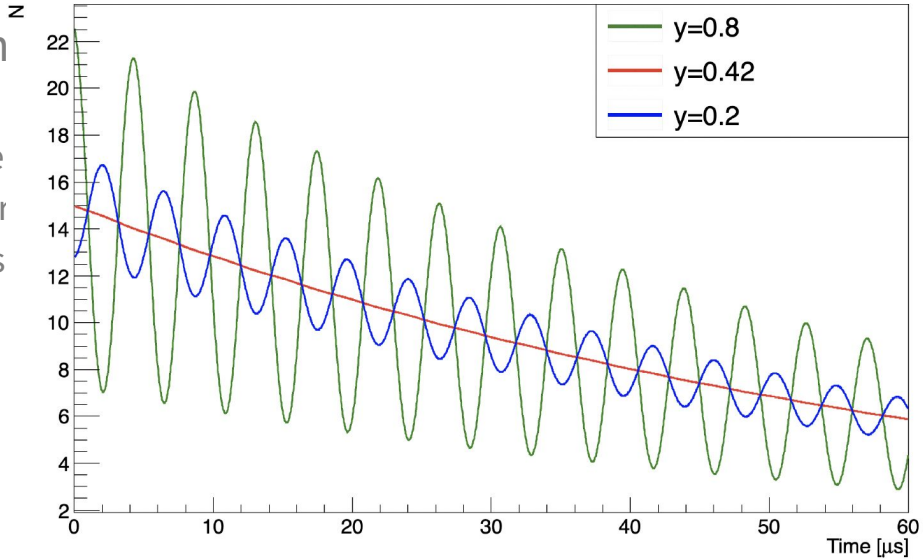

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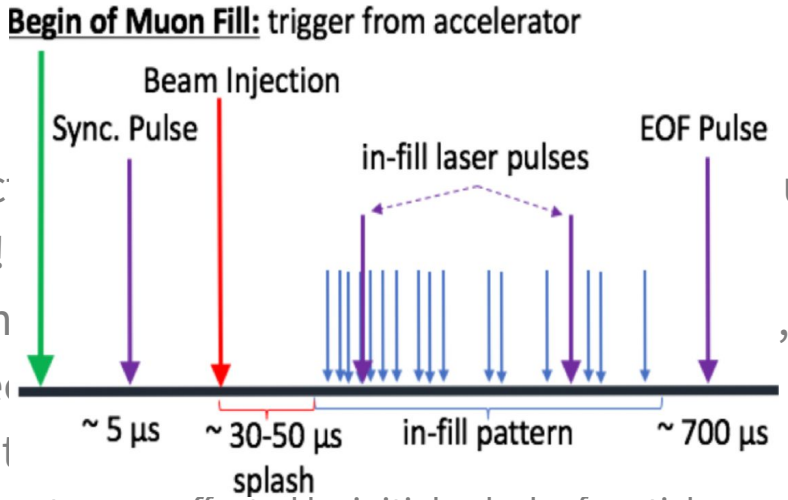

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Form a faster way to compute amplitudes

- Mathematica is deeply used for theoretical calculation, but it has limitation in managing large expression, consuming memory and life span!
- Form language is optimize to perform dirac algebra and manage large rational function providing interesting tool like:
    - Sort command, efficient sorting of the expression
    - ID, pattern matching and replacing
    - Specific command to optimize large expression enabling faster evaluation wrt conventional compiler
- If you need to compute amplitude, switch to Form and your life will be easier and less miserable