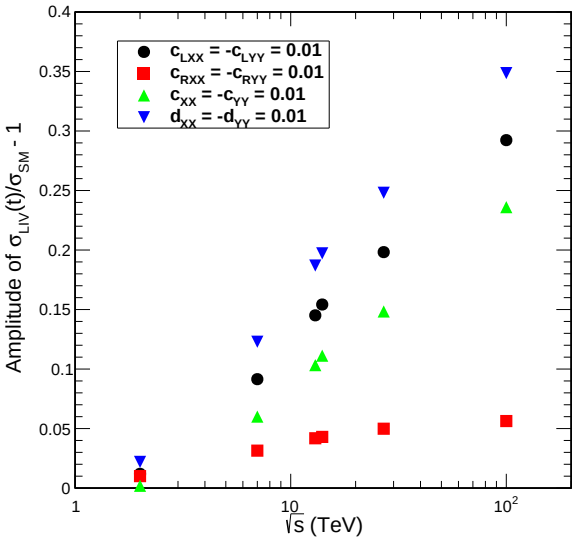
Amplitudes of the $f(t)$ functions, at selected center-of-mass energies, is shown on Figure **??**. Greatest modulations of $t\bar{t}$ cross sections are expected in the benchmark scenarios $c_{XY} = c_{YX}$ and $c_{XX} = -c_{YY}$. The sensitivity is higher when probing components in the ecliptic plane.

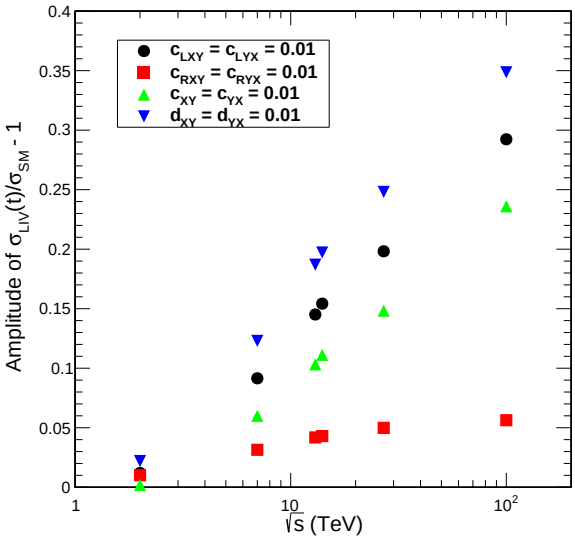
At Tevatron, $t\bar{t}$ production was initiated mainly by $q\bar{q}$ annihilation while at the LHC, gg fusion is dominant. We compare the $f(t)$ amplitude, between samples generated at the same center-of-mass energy $\sqrt{s} = 1.96$ TeV for D$\emptyset$ and CMS. We find similar amplitudes between D$\emptyset$ and CMS at $\sqrt{s} = 1.96$ TeV for the benchmarks $c_{XX} = -c_{YY} \neq 0$ and $c_{XY} = c_{YX} \neq 0$. However, at the same energy and production mechanism, the LHC position induces worst expected sensitivity to $c_{XZ} = c_{ZX} \neq 0$ and $c_{YZ} = c_{ZY} \neq 0$ benchmarks. We scanned the latitude and azimuth of poential experiments on earth and foiund that both ATLAS or CMS sit in a dip for the projected sensitivity on those SME coefficients.

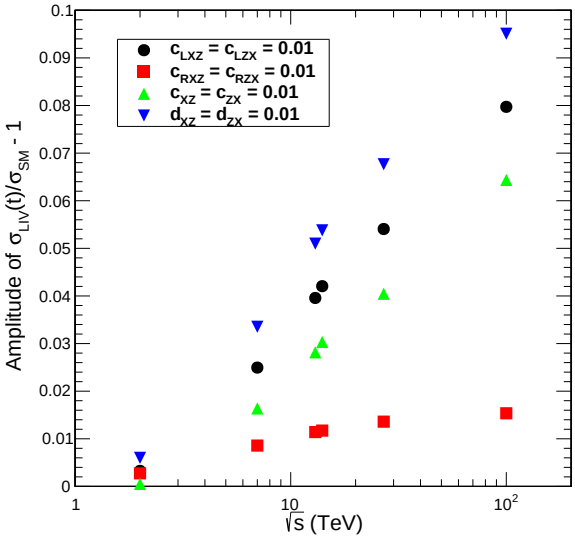
We compute the projected precision on the SME coefficients with HistFactory [**?**], using the Asimov dataset, for the above mentioned collider and SME coefficient benchmarks. Histograms for LIV signal, SM $t\bar{t}$ production and single top background are provided, with bins of one sidereal hour. Systematic uncertainties are rounded from [**?**] : 2% is attributed to the luminosity, 4% on the inclusive measurement of $t\bar{t}$ production, and 2% on single top production. These projections are shown on Table 1.

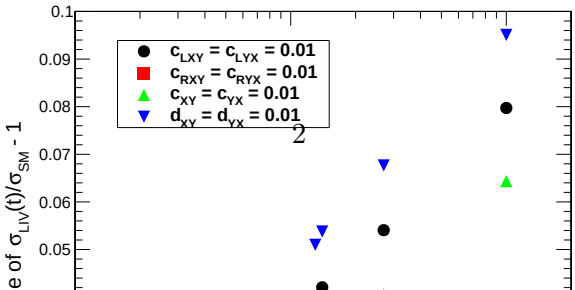
Table 1 – Comparison of expected precisions in $t\bar{t}$ signature for D$\emptyset$, LHC (Run II), HL-LHC, HE-LHC, FCC experiment.

	D$\emptyset$	LHC (Run II)	HL-LHC	HE-LHC	FCC
$\Delta c_{LXX}, \Delta c_{LXY}$	1×10^{-1}	2×10^{-4}	2×10^{-5}	4×10^{-6}	1×10^{-6}
$\Delta c_{LXZ}, \Delta c_{LYZ}$	8×10^{-2}	5×10^{-4}	9×10^{-5}	2×10^{-5}	4×10^{-6}
$\Delta c_{RXX}, \Delta c_{RXY}$	9×10^{-2}	4×10^{-4}	9×10^{-5}	2×10^{-5}	5×10^{-6}
$\Delta c_{RXZ}, \Delta c_{RYZ}$	7×10^{-2}	2×10^{-3}	3×10^{-4}	6×10^{-5}	2×10^{-5}
$\Delta c_{XX}, \Delta c_{XY}$	7×10^{-1}	2×10^{-4}	3×10^{-5}	6×10^{-6}	1×10^{-6}
$\Delta c_{XZ}, \Delta c_{YZ}$	6×10^{-1}	6×10^{-4}	1×10^{-4}	2×10^{-5}	4×10^{-6}
$\Delta d_{XX}, \Delta d_{XY}$	1×10^{-1}	1×10^{-4}	2×10^{-5}	3×10^{-6}	8×10^{-7}
$\Delta d_{XZ}, \Delta d_{YZ}$	7×10^{-2}	4×10^{-4}	7×10^{-5}	1×10^{-5}	3×10^{-6}


$c_{LXX} = -c_{LYY} = 0.01$
$c_{RXX} = -c_{RYY} = 0.01$
$c_{XX} = -c_{YY} = 0.01$
$d_{XX} = -d_{YY} = 0.01$
Amplitude of $\sigma_{LIV}(t)/\sigma_{SM}$ - 1
$\sqrt{s}$ (TeV)


$c_{LXY} = c_{LYX} = 0.01$
$c_{RXY} = c_{RYX} = 0.01$
$c_{XY} = c_{YX} = 0.01$
$d_{XY} = d_{YX} = 0.01$
Amplitude of $\sigma_{LIV}(t)/\sigma_{SM}$ - 1
$\sqrt{s}$ (TeV)


$c_{LXZ} = c_{LZX} = 0.01$
$c_{RXZ} = c_{RZX} = 0.01$
$c_{XZ} = c_{ZX} = 0.01$
$d_{XZ} = d_{ZX} = 0.01$
Amplitude of $\sigma_{LIV}(t)/\sigma_{SM}$ - 1
$\sqrt{s}$ (TeV)


$c_{LXY} = c_{LYX} = 0.01$
$c_{RXY} = c_{RYX} = 0.01$
$c_{XY} = c_{YX} = 0.01$
$d_{XY} = d_{YX} = 0.01$