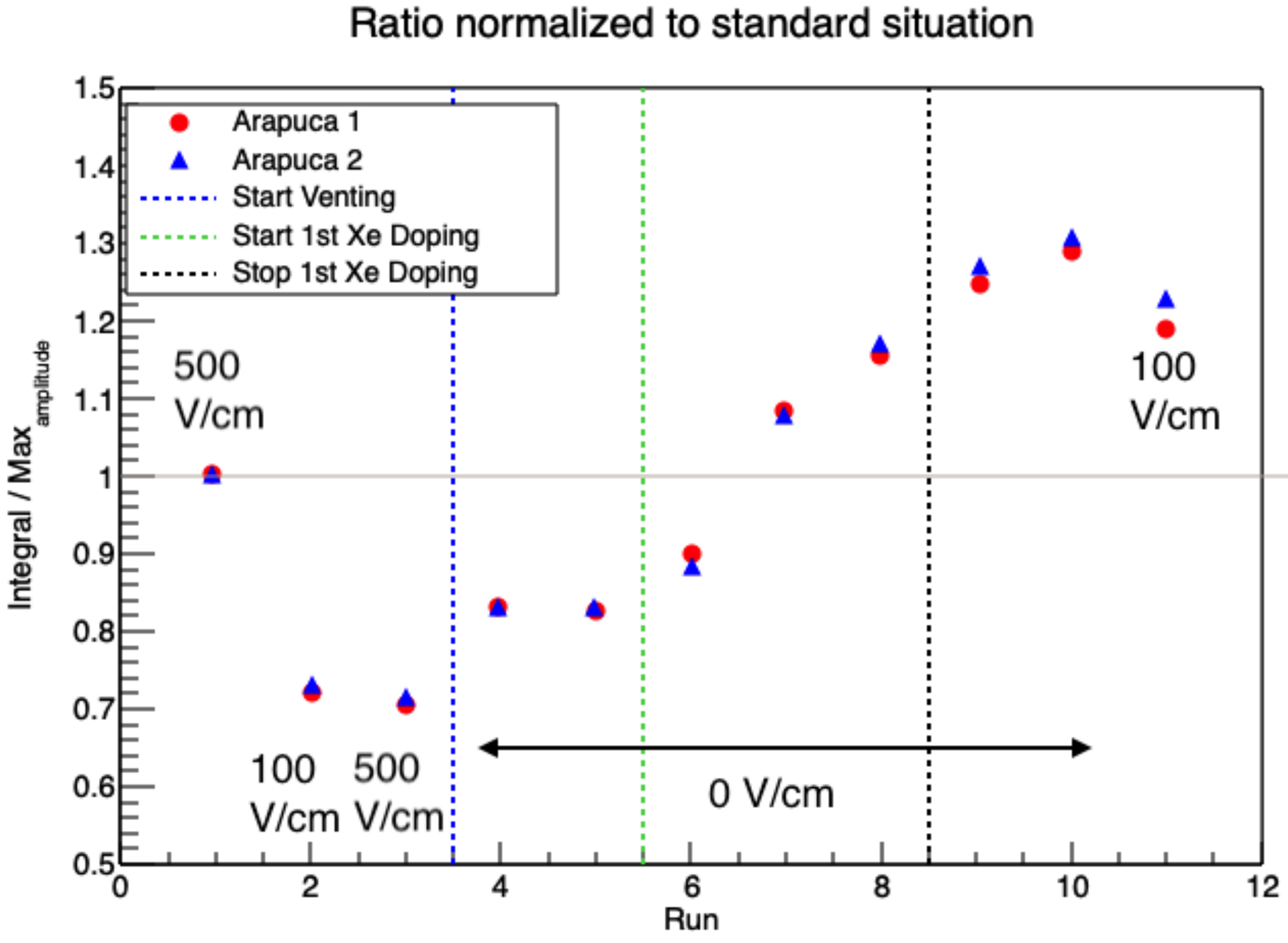
Xe Doping
“1st Xe injection”

April 2, 2020

Dante Totani - Flavio Cavanna

Integral - Max amplitude ratio, normalized to standard situation (6 ms electron lifetime, before the purity drop in Summer 2019)



Run conversion

Plot	ProtoDUNE
1	8562
2	10611
3	10772
4	10922
5	10941
6	10945
7	10947
8	10948
9	10949
10	10954
11	10988

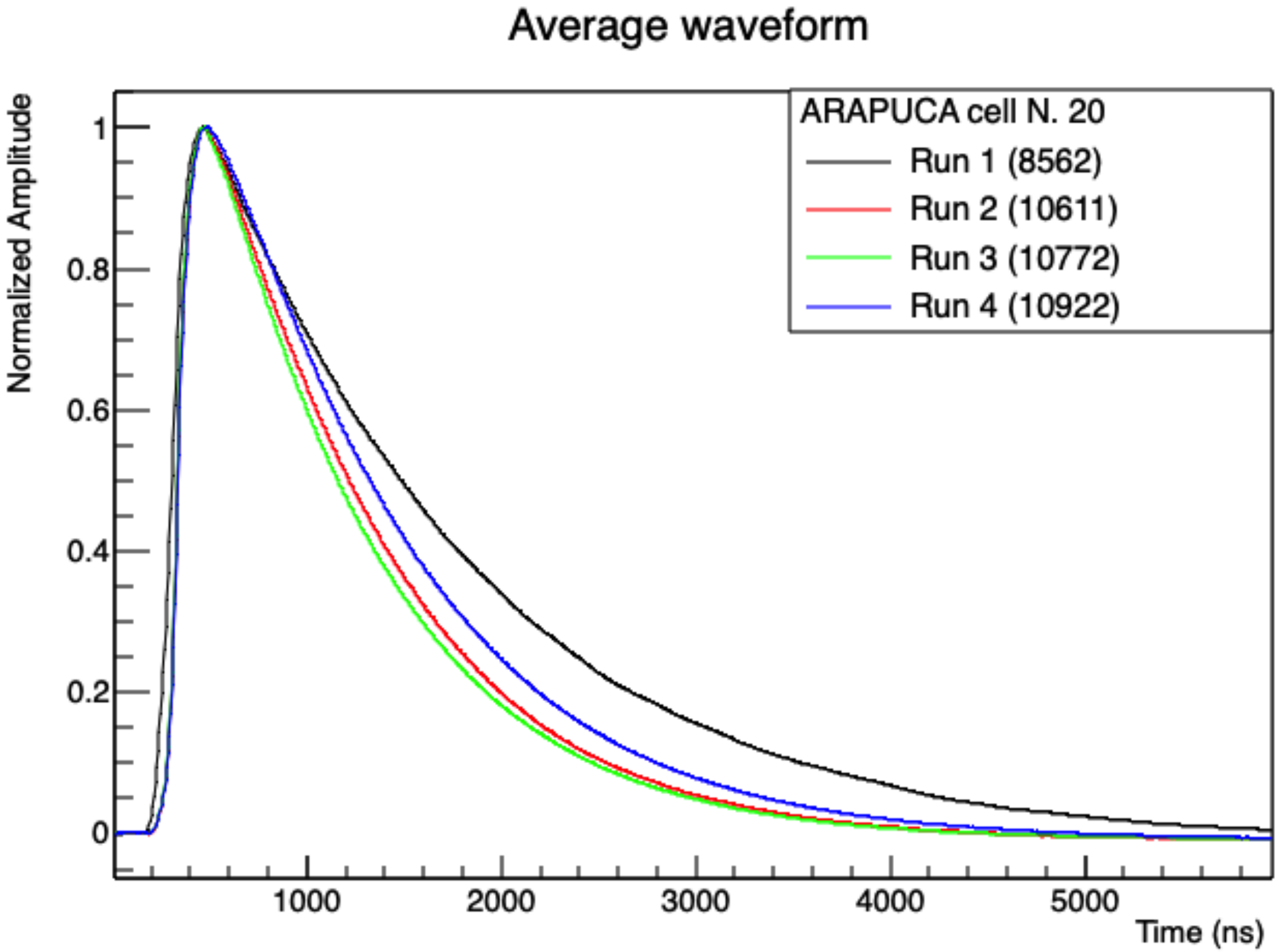
Before Xe doping - E field effect

-Black = 500 V/cm + Before N2 contamination

-Red = 100 V/cm + N2 contamination

-Green = 500 V/cm + N2 contamination

-Blue = 0 V/cm + N2 + Beginning of the venting process

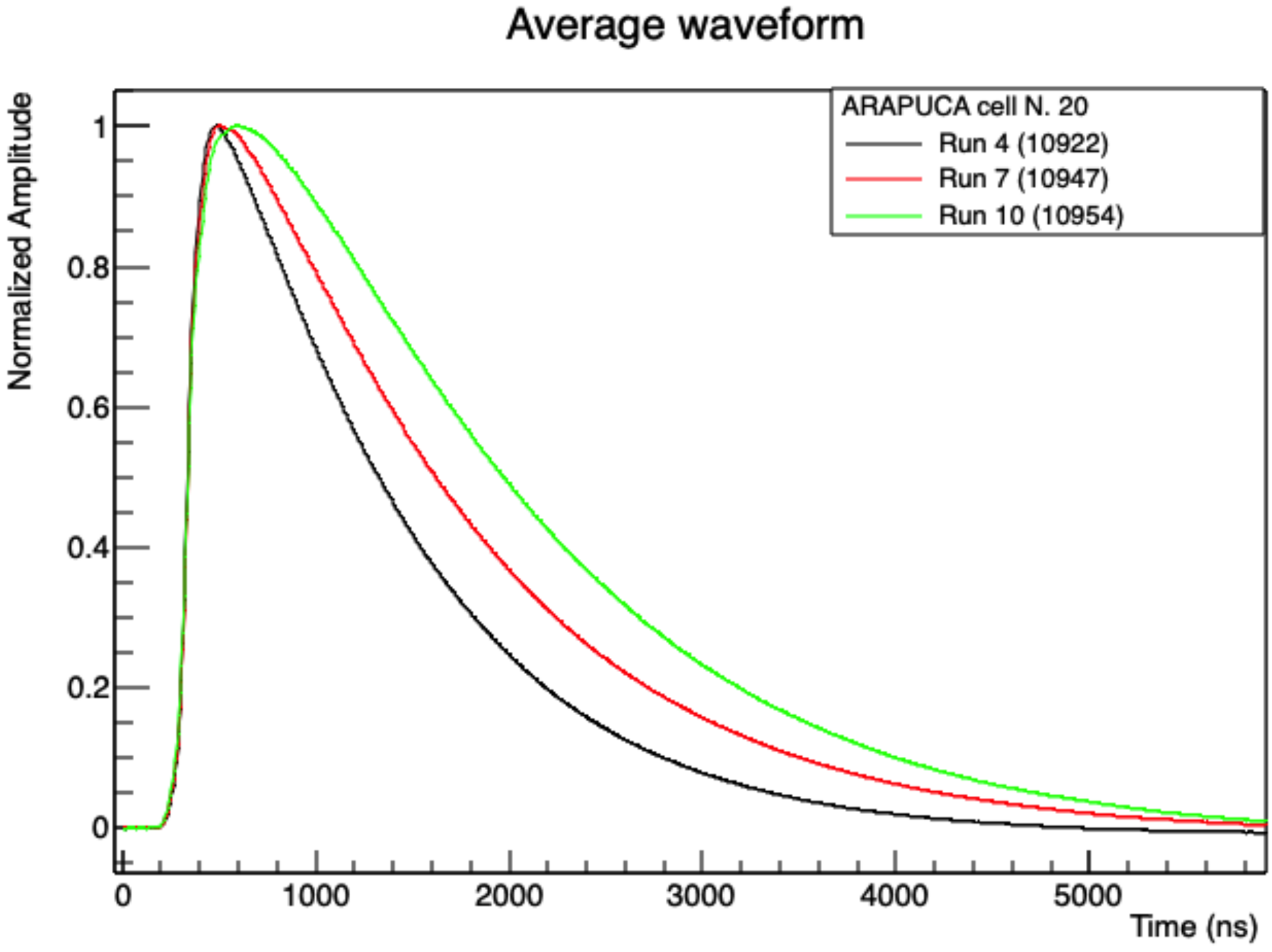


Xe doping effect **E field = 0 V/cm**

-Black = Before 1st Xe doping

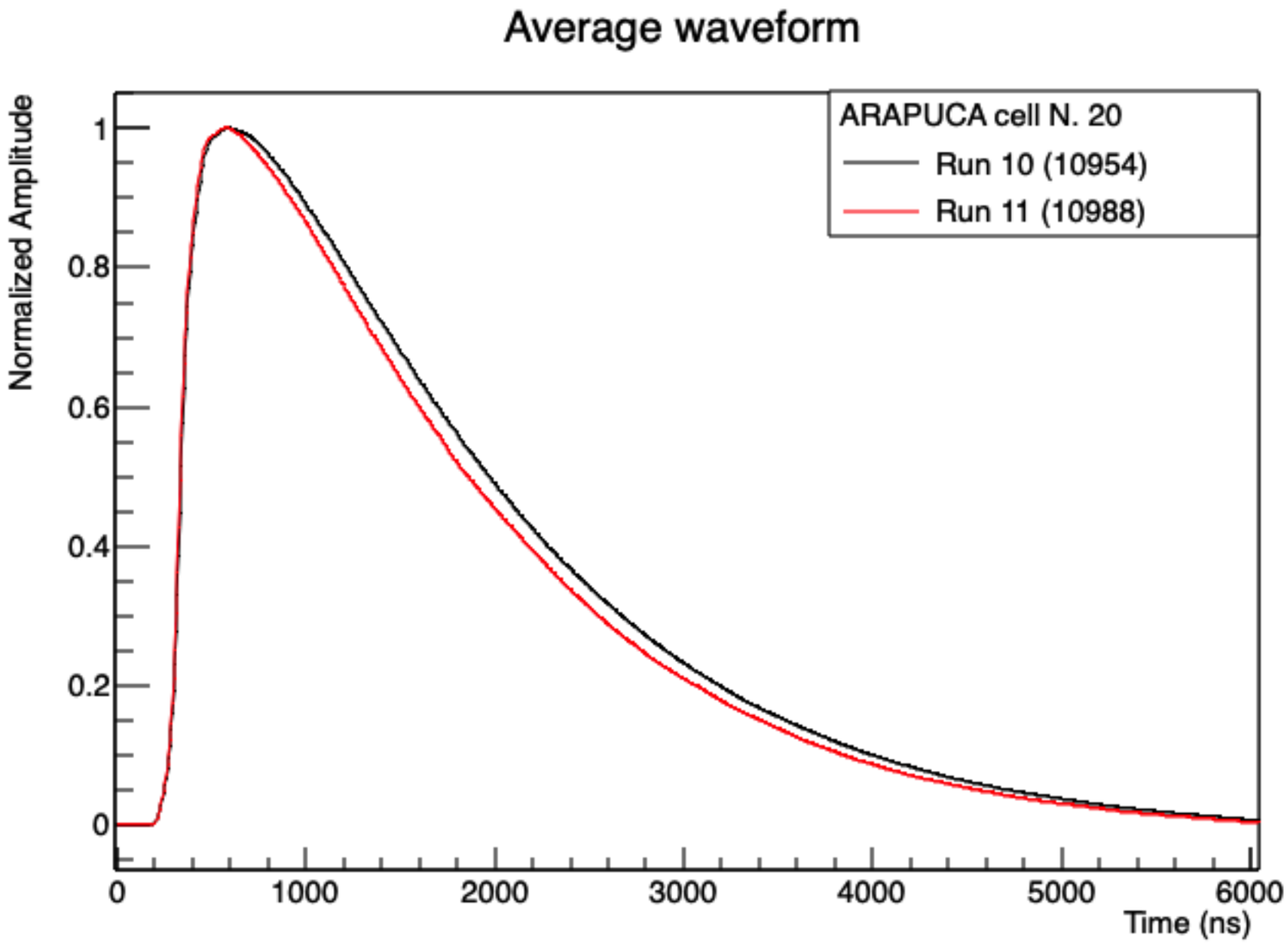
-Red = Between 1st Xe doping

-Green = After 1st Xe doping

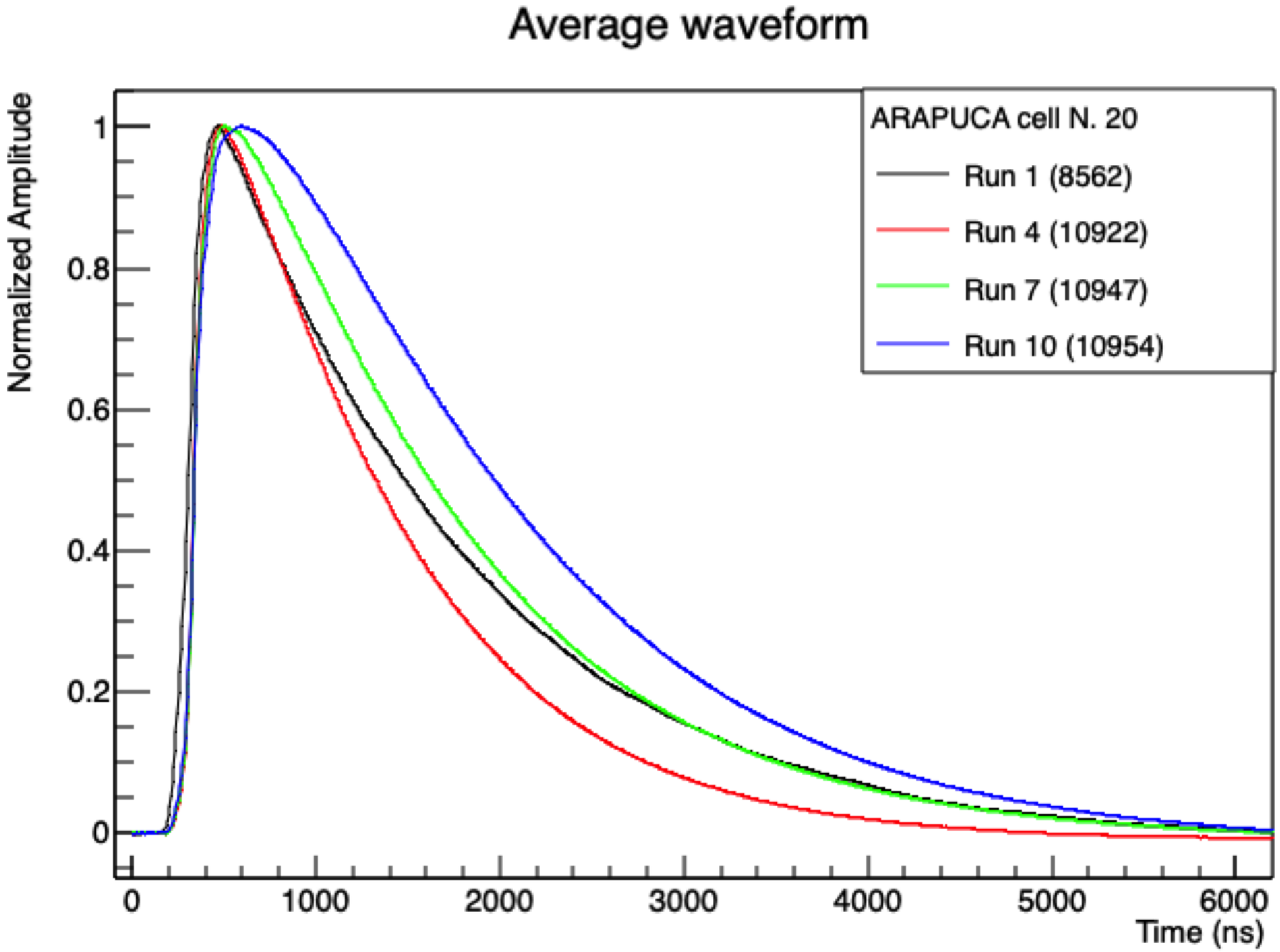


After 1st Xe doping - E field effect

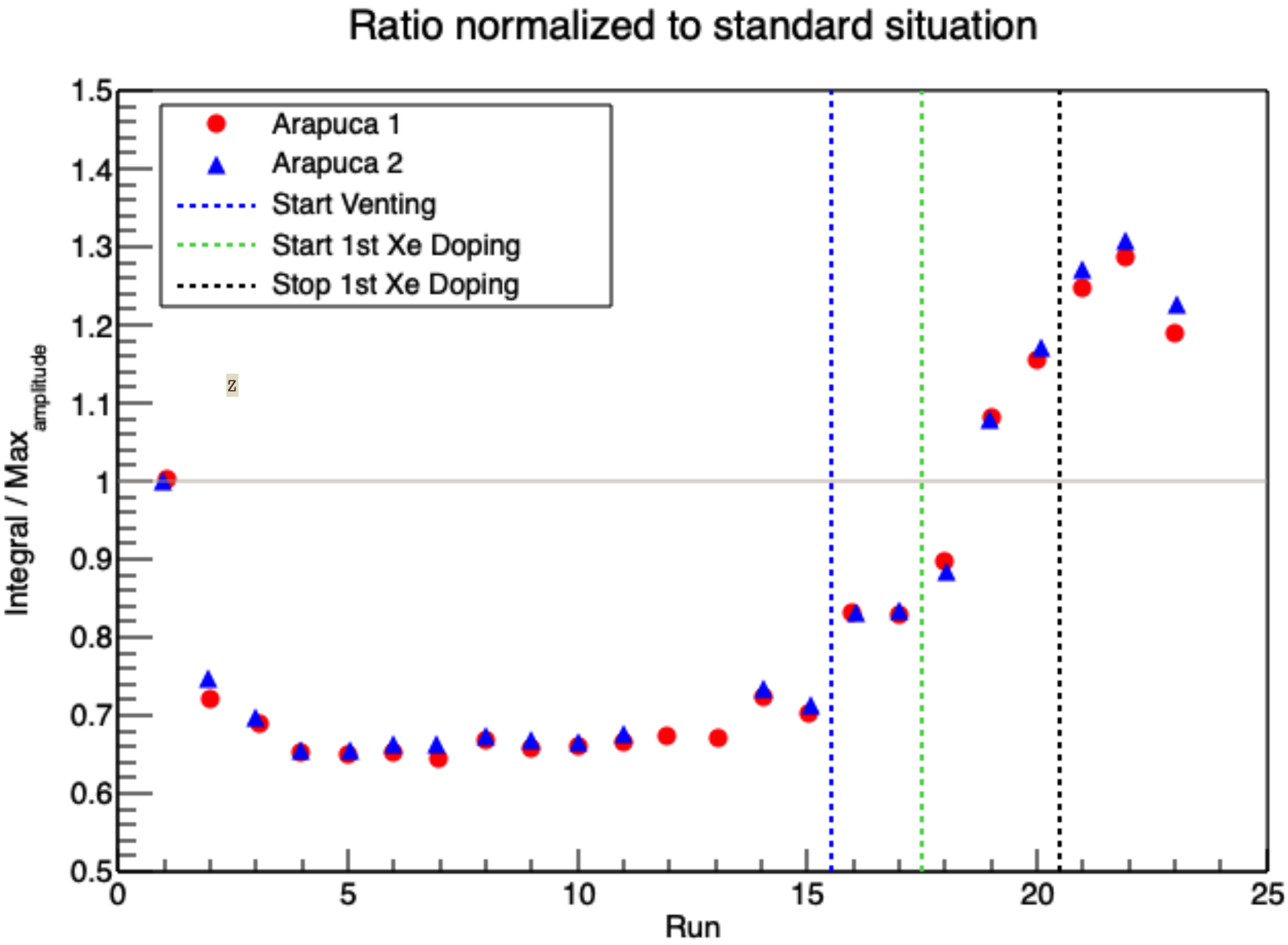
-Black = 0 V/cm
-Red = 100 V/cm



-Black = 500 V/cm + Before N2 contamination
-Red = 0 V/cm + N2 + Before 1st Xe doping
-Green = 0 V/cm + N2 + Middle of 1st Xe doping
-Blue = 0 V/cm + N2 + End of 1st Xe doping

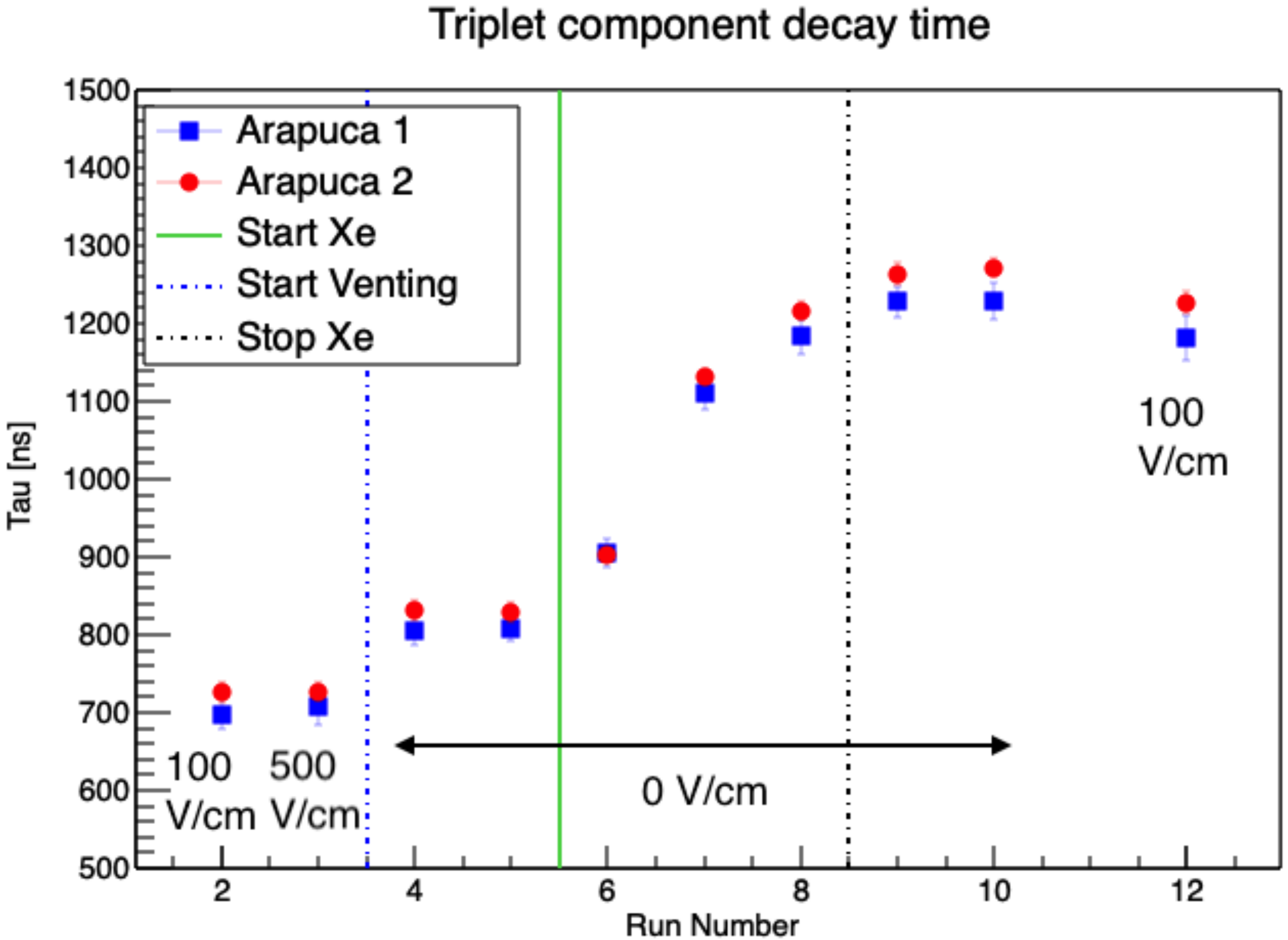


Integral - Max amplitude ratio, normalized to standard situation (6 ms electron lifetime, before the purity drop in Summer 2019)



Run conversion

Plot	ProtoDUNE
1	8562
2	9004
3	9056
4	9060
5	9070
6	9071
7	9072
8	9125
9	9142
10	9168
11	9170
12	9337
13	9611
14	10611
15	10772
16	10922
17	10941
18	10945
19	10947
20	10948
21	10949
22	10954
23	10988



Deconvoluted average waveform slow component fit using $f(x) = a + b \cdot e^{-t/\tau}$

A second Xe injection has been made and analysis is going on…