Speed -- 3D vs. planar

1. 3D lateral cell size can be smaller than wafer thickness, so:

shorter collection distances

2. in 3D, field lines end on cylinders rather than on circles, so:

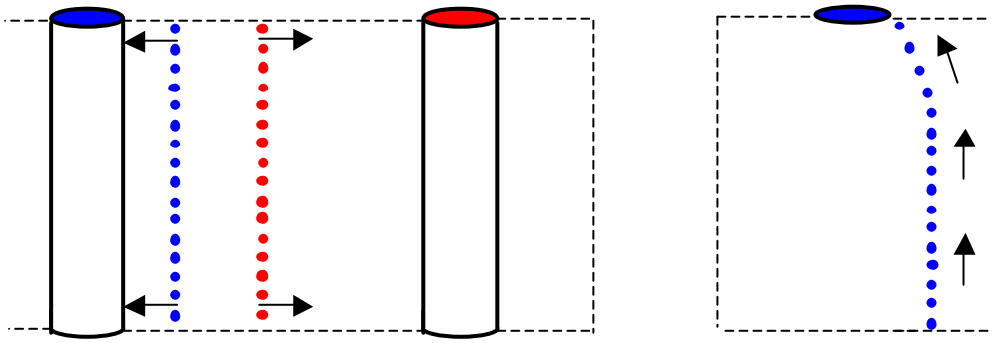
higher average fields for any given maximum field

(price: larger $C_{electrode}$: we now have 0.2 pF / 121 μm long electrode)

3. most of the signal is induced when the charge is close to the electrode, where the electrode solid angle is large, so:

planar signals are spread out in time as the charge arrives

3D signals are concentrated in time as the track arrives



4. if readout chip has inputs from both n^+ and p^+ electrodes,

drift time correction can be made

5. for long, narrow pixels and (eventually) fast electronics,

track locations within the pixel can be found