**Definition 0.1.** Let $F : \mathcal{C} \to \mathcal{D}$ be a homotopy functor. $F$ is **stably n-excise** or satisfies stable nth order excision, if the following is true for some numbers $c$ and $\kappa$:

$E_n(c, \kappa)$: If $\mathcal{X} : \mathcal{P}(S) \to \mathcal{C}$ is any strongly co-cartesian $(n + 1)$-cube such that for all $s \in S$, the map $\mathcal{X}(\emptyset) \to \mathcal{X}(s)$ is $k_s$-connected and $k_s \geq \kappa$, then the diagram $F(\mathcal{X})$ is $(-c + \Sigma k_s)$-Cartesian.

The number $c$ can be negative. Since it only makes sense to talk about connectivity down to $-1$, the only useful information comes from $c \leq \Sigma k_s + 1$. The smaller $c$ is, the stronger the statement, because the connectivity of the map to the final object is higher. Similarly, $\kappa \geq -1$ and the smaller the stronger. If $E_n(c, \kappa)$ holds for all $\kappa$, then we say $E_n(c)$. Note when $\kappa = -1$, we are saying that the initial maps in the cube can be anything (do not even need surjectivity on $\pi_0$.)

**Definition 0.2.** The functor $F$ is **$\rho$-analytic** if there is some number $q$ such that $F$ satisfies $E_n(n\rho - q, \rho + 1)$ for all $n \geq 1$. Note that it is the same $q$ for all $n$.

What does $n$-excision mean in the context of these definitions? Recall $n$-excise means $F$ takes all strongly co-cartesian $(n + 1)$-cubes to cartesian $(n + 1)$ cubes. So $F(\mathcal{X})$ is $(-c + \Sigma k_s)$-cartesian for all $c$. Since this statement does not require anything of the initial maps in the cube $\mathcal{X}$, an $n$-excise functor $F$ satisfies $E_n(c)$ for all $c$ (and for all $\kappa$ as indicated by the notation).

Let’s look at some examples.

**Example 0.3.** $E_n(c)$ for $F = Id_{\mathcal{T}op}$

Any line is of the form $c = \rho n - q$. The dotted line above the data points shows that $Id_{\mathcal{T}op}$ is $(\frac{3}{2})$-analytic, since the identity satisfies $E_n(n)$ for all $n \geq 1$ (by higher Blakers-Massey) and $n \leq \frac{3}{2} n - \frac{1}{2}$ for all $n \geq 1$. The bold line through the data points demonstrates that the identity on spaces is 1-analytic. The picture in general shows that $F$ is $\rho$-analytic for $\rho \geq 1$.

**Example 0.4.** Consider a $k$-excise functor $F$. This functor is also $(k + 1)$-excise, and $k$-excision implies stable $k$-excision, so $F$ satisfies $E_k(c)$ for all $c$. I’ve represented this with lots of dots. Unfortunately, we don’t know anything about $E_n(c)$ for $n < k$, so we can’t say anything about analyticity, since we need a line bounding all the data starting at $n = 1$. $E_n(c)$ for $F$
Example 0.5. \( E_n(c) \) for \( F = Q(-)^m \). Recall that \( F \) is \( m \)-excisive. So \( F \) is 0-analytic, since it satisfies \( E_n(0) \) for all \( n \geq 0 \).

Example 0.6. \( E_n(c) \) for \( F = QMap(K, -)_+ \). \( F \) is \( \dim K \)-analytic, since \( F \) satisfies \( E_{n-1}(\dim K, 1) \).