nysical simulation to feed

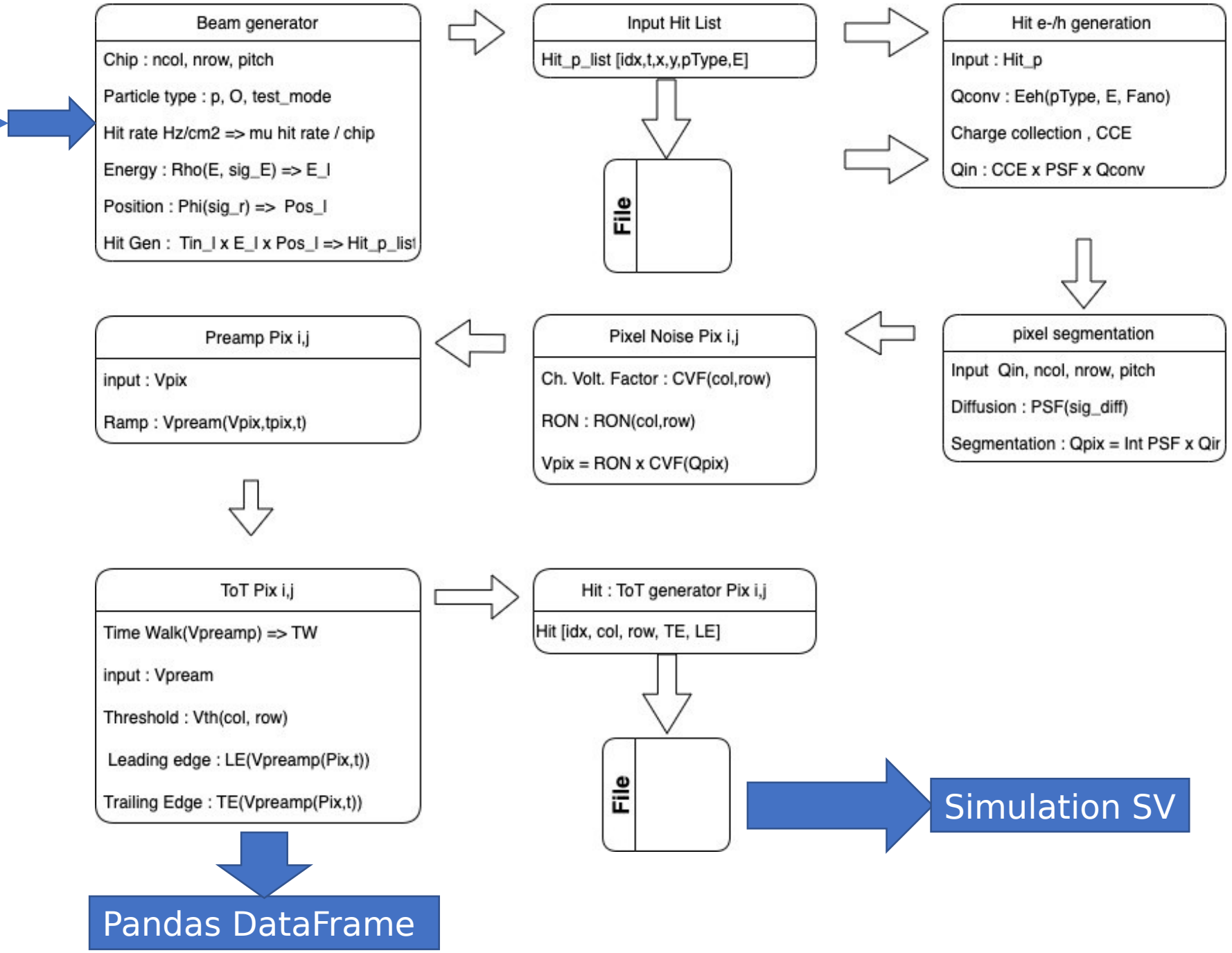
1/ Hit Time Line Generation

2/ Hit Charge Generation

3/ Pixel Charge Segmentation

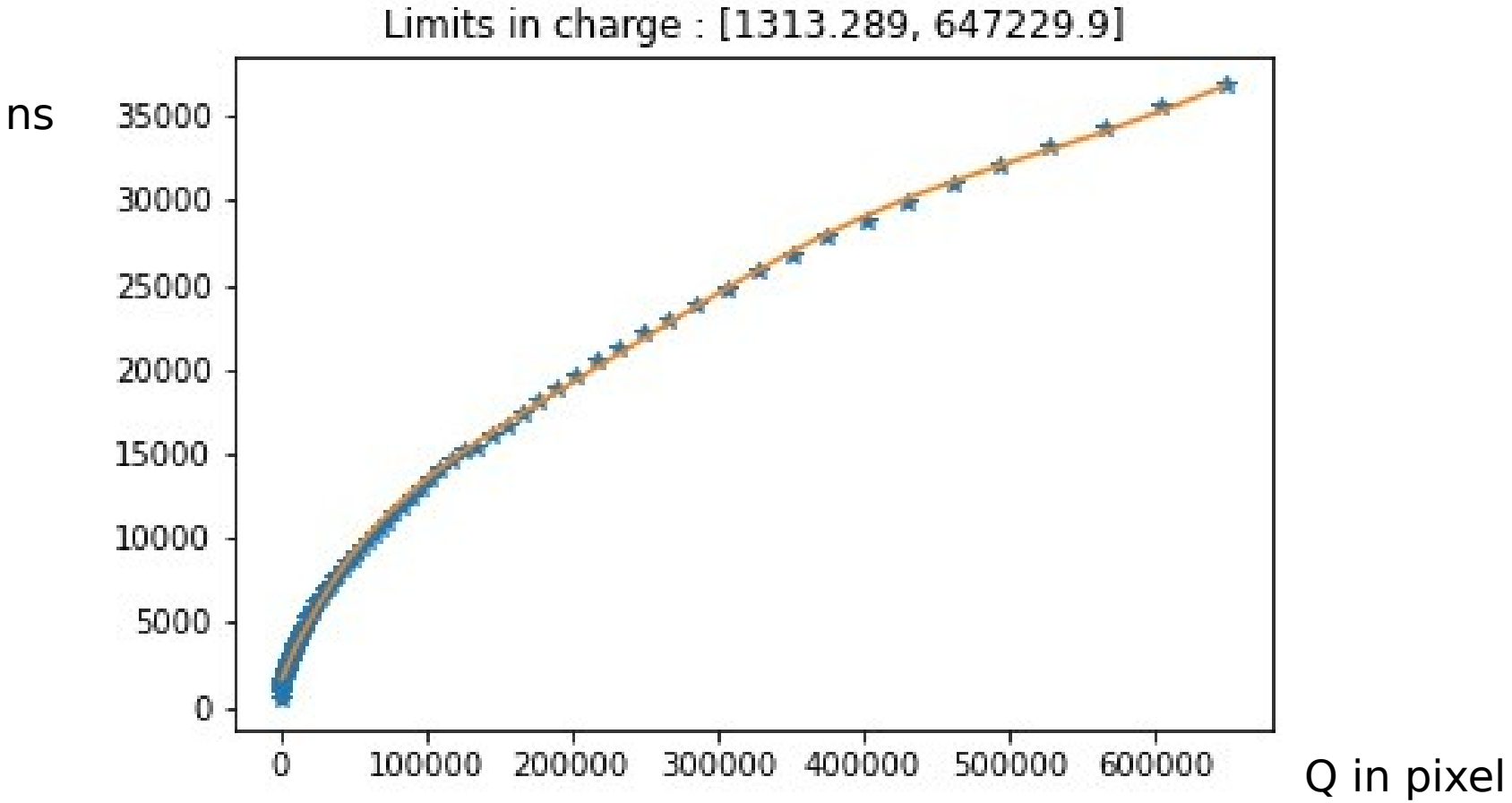
4/ ToT Generation

Sim Config file
.yml



Q vs ToT

transfer function (Rachid)



Pattern Generation : HT[X].HC[Y].HP[Z].HM

			Method		parameters definition	
					Common	Particular
Hit Time Line	Ref	param	type	test		
	HT_P	r	**Poisson**	**Application**		
	HT_F	r	**Fix**	**Functional**	Hit rate kHz/cm2	time-step
	HT_U	r	**Uniform**	**Robustness**		time-range
Hit Charge	Ref					
	HC_U	min_max	**Uniform**	**Robustness**		min-max
	HC_N	mu_sig	**Normal**	**Application**		mean-sigma
	HC_F	val	**Fix**	**Functional**		values
Hit Position	Ref					
	HP_U		**Uniform**	**Robustness**		
	HP_N	mu_sig	**Normal**	**Application**		mean_sigma
	HP_F		**Fix**	**Functional**		x,y um
Pixel Multiplicity	Ref					
	HM_S		**Single**	**Functional**		diff_0
	HM_D		**Diffusion**	**Application**		diff_factor = coeff. * pitch
Chip parameter	Ref					
	Size		Pixels			row_col_pitch
	PRNU		threshold			thre
	TW		Noise_TW			

Data rate / 32 col

row	col	pitch
128	96	42

			Hit mult / col	**bit/evt @ mux**
			3	**32**
Param_list	mean	mean	mean	mean
rate kHz/cm2	chip rate /us	col rate / us	col rate w/ Pix mult /us	mux rate kb/s
10	0,002167603	2,25792E-05	6,77376E-05	203,2128

		TOT	TYPE	ADD	BCID	Col add	Mux add	EOC
			LE/TE	pix	25ns	32	3	
In-pixel		15						
	ROM			10				
	SRAM		1		4			
EOC		**24**						
	LE evt	20		10	10			
	TE evt	20		10	10			
	TOT evt	24		10	14			
Mux 32		**31**						
	32 EOC	29				5		24
	3 outputs	2					2	

DataFrame.to_csv

	Hit_Idx	Hit_ToA	Hit_x	Hit_y	Hit_row	Hit_col	Pix_row	Pix_col	Pix_Q	Pix_Idx	Pix_LE	Pix_Idx	Pix_TE
9	1.0	2.0000000000000002e-07	3144.6017705945997	3014.2104657576833	71.0	74.0	70.0	73.0	3261.0	9.0	200.0	9.0	2242.0
10	1.0	2.0000000000000002e-07	3144.6017705945997	3014.2104657576833	71.0	74.0	70.0	74.0	7275.0	10.0	200.0	10.0	3013.0
11	1.0	2.0000000000000002e-07	3144.6017705945997	3014.2104657576833	71.0	74.0	70.0	75.0	6464.0	11.0	200.0	11.0	2861.0
12	1.0	2.0000000000000002e-07	3144.6017705945997	3014.2104657576833	71.0	74.0	71.0	73.0	6606.0	12.0	200.0	12.0	2887.0
13	1.0	2.0000000000000002e-07	3144.6017705945997	3014.2104657576833	71.0	74.0	71.0	74.0	14738.0	13.0	200.0	13.0	4349.0
14	1.0	2.0000000000000002e-07	3144.6017705945997	3014.2104657576833	71.0	74.0	71.0	75.0	13095.0	14.0	200.0	14.0	4066.0
15	1.0	2.0000000000000002e-07	3144.6017705945997	3014.2104657576833	71.0	74.0	72.0	73.0	5332.0	15.0	200.0	15.0	2645.0
16	1.0	2.0000000000000002e-07	3144.6017705945997	3014.2104657576833	71.0	74.0	72.0	74.0	11894.0	16.0	200.0	16.0	3855.0
17	1.0	2.0000000000000002e-07	3144.6017705945997	3014.2104657576833	71.0	74.0	72.0	75.0	10568.0	17.0	200.0	17.0	3618.0