

PhotoZ simulation for a big catalog

PhotoZ code has not been optimized for computing speed : \sim sec for 1000 galaxies

CPU time in photoz code is already an issue for simulation and will definitely be a major one for real data. With some optimization and a negligible lost of performances we can save a factor 2.8

Z range [0, 4.5] \rightarrow [0, 3] another 1.5 gain \rightarrow total gain 4.2

What takes long is the PDF computation (zbin x typebin x ebvbin calls of Chi2 fonction)
It's not the topic of this talk but I feel really concerned by this problem and I'm starting to look for solutions

In order to add PZ in LSST simulations it's much faster to pre-compute them on a sample of zbin x type (Early, Spirals, SB) x mag and randomly pick them from the pre-computed distributions

2 options for mag :

- apparent magnitude in one band (i) \rightarrow natural way
- absolute magnitude

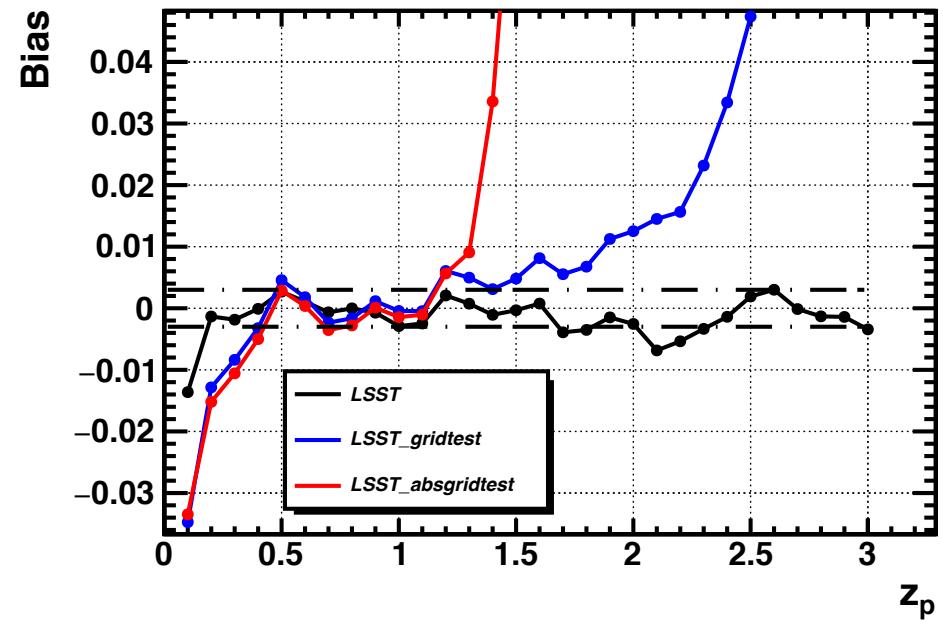
Z grid = [0, 3]

36.84	23.48	23.48	TFlux::linearinterpolation(int, double, double, int)
29.69	42.40	18.92	TPhotoZ::Chi2_simu(double*, float*, float*)
4.90	45.52	3.12	TPDF::Integration(double, double)
4.05	48.10	2.58	TPhotoZ::LikelihoodGrid()
3.80	50.52	2.42	TApparentMagnitude::ComputeFluxTemplate(double, int, double, int)
2.93	52.39	1.87	TFlux::EvalFromTable(int, double, double, int)
2.45	53.95	1.56	TPDF::MakeMarg(double***, double**, int*)
2.28	55.40	1.45	TPrior::PTZIFromHistos(int, double, double)
1.90	56.61	1.21	TPrior::Eval(std::string, double, double)
1.78	57.75	1.14	std::pow(double, int)
1.57	58.75	1.00	TPrior::PTIFromHistos(int, double)
1.37	59.62	0.88	bool std::operator==(char, std::char_traits<char>, std::allocator<char>>(std::basic_string<char, std::char_traits<char>, std::allocator<char> > const&, char const*)
0.83	60.15	0.53	TFlux::LoadTable(std::string)
0.64	60.56	0.41	TPhotoZ::Chi2(double*)
0.62	60.95	0.40	TMath::Exp(double)
0.58	61.32	0.37	TPrior::GetBroadType(std::string)
0.49	61.63	0.31	TFlux::EvalFromTable(double, double, double, int)
0.41	61.89	0.26	TApparentMagnitude::GetFLUXMAGNULL(int)

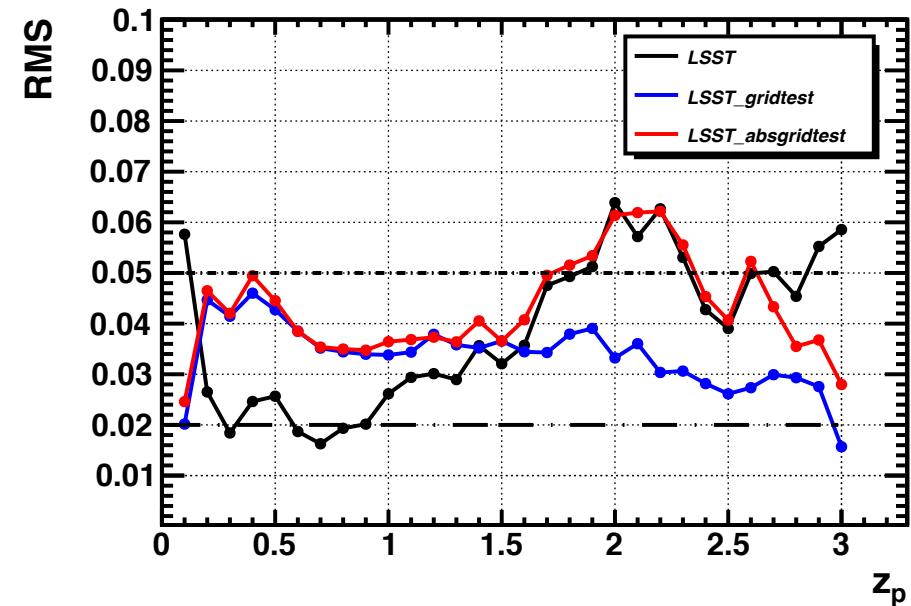
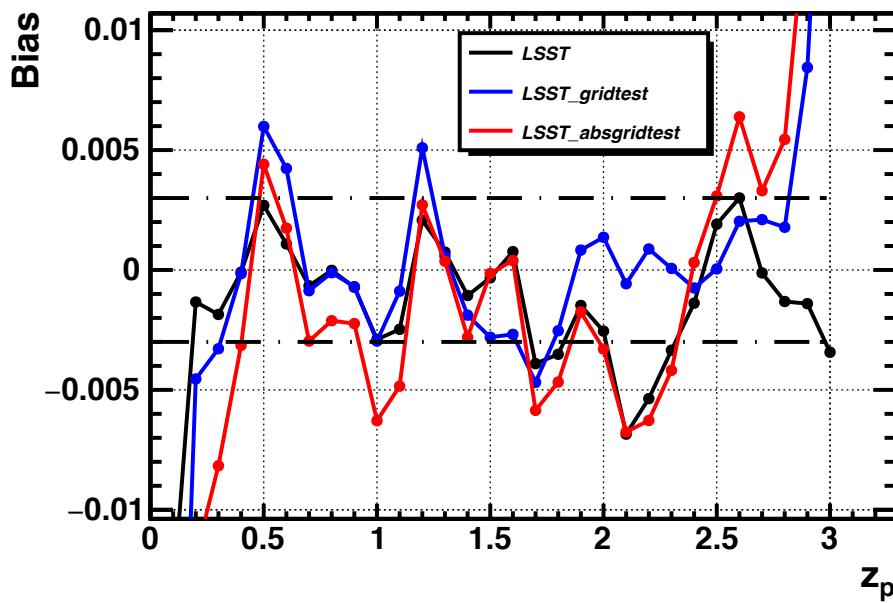
...

Total = 63.73 (~ 250 last week)

1st attempt : use of PDF(z)

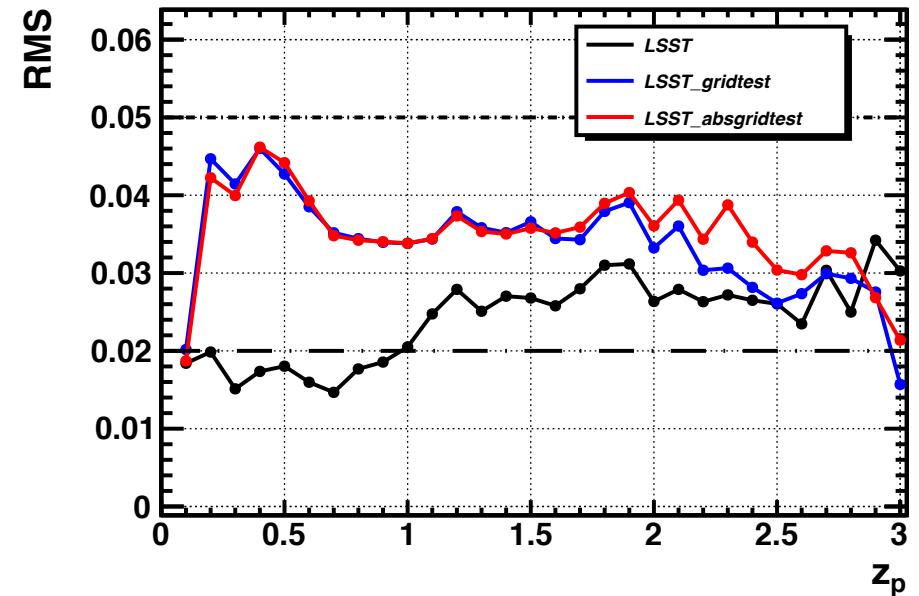
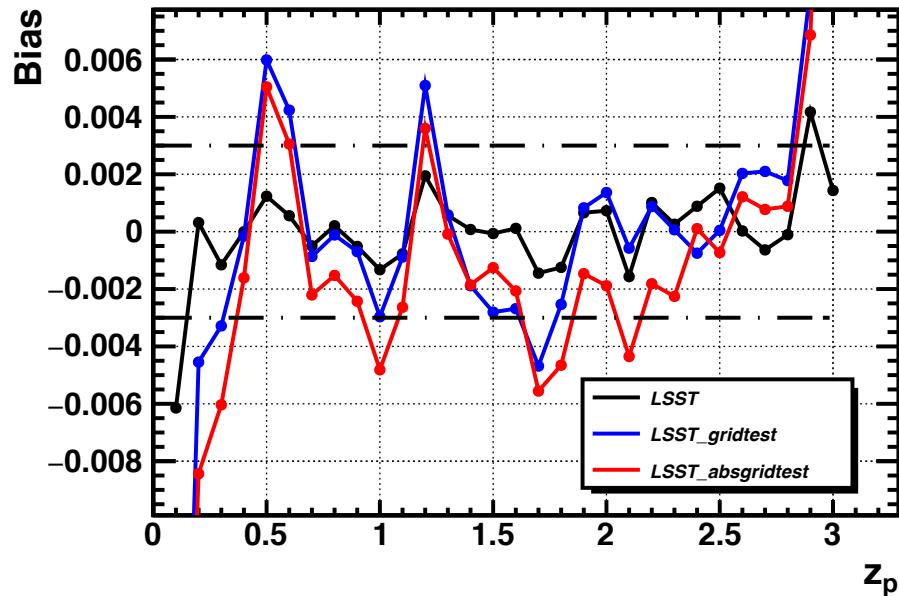


2nd attempt : use of zp (marg)



Using quality cut (podds) :

- Select only galaxies with podds > 0.8 before co-adding in the training sample
- Compute probability(z,mag,type) for podds > 0.8 (training) to select events in test sample



No real improvement on bias

Still far from complete photo-z computation