

Dear Dr. Arabas,

Thank you for your technical/editorial corrections and suggestions. I have addressed your individual points below in blue.

—

- the "source-based" notion is used in the abstract before being defined, and in the same sentence as just-in-time-compilation making it misleading, suggest to specify that this is a "source-based spectral moment method", and best if JIT compilation is addressed in a separate sentence;

Changed as suggested.

- for the P_f symbol for fragment distribution, suggest to use upright "f" index (P_{f}), so that it is clearer that in P_{fm} f is a label, while m has a value;

Changed as suggested.

- check also subscripts in superscripts in eq. 16a-16d;

I didn't see any other changes that would be necessary here.

- on page 13, the sentence in line 257-259 suggests that use of JIT compilation "leads to ... very low memory usage", which given that any Numba-compatible code can also be run without Numba with essentially the same memory footprint, seems misleading;

For simplicity, I deleted this sentence. This section now reads,

"This leads to BinMod1D effectively using machine code to loop through each possible bin-pair interaction even when utilizing multiple distributions in the full 1D column model mode for all heights at once."

- on page 13, when referring to "Interaction() object" the parentheses seem unneeded, and "an object of the Interaction class" would likely read better (?);

Changed as suggested. I've also removed other similar instances as well.

- the Safronov 1963 reference is given with wrong year, should be 1962 as indicated in the reference list (thus, should be cited as Safronov, Golovin rather than Golovin, Safronov on page 17, note also that the sentence suggests that the Scott paper provided the solution, while Golovin/Safronov provided the kernel, but the analytic solutions are given in the '62/'63 papers);

Changed as suggested.

I will note here maybe a slight unnecessary technicality. I believe (and I could be wrong here) that Safronov and Golovin only provided the solution for the initial inverse-exponential distribution (i.e., $\mu=0$ or $\nu = 1$) whereas Scott provides the *general* solution for arbitrary μ (ν) gamma parameter (It's hard for me to find English translations of these foreign papers). So I think the original wording probably was ok but I changed the wording anyway for simplicity.

- please unify journal names in references - some are written as acronyms, some in full;

Changed as suggested.

- correct capitalization in spelling of Python (not python) in line 113 on page 5.

Changed as suggested.