Errata for ‘Computational Methods for Burnup Calculations with Monte Carlo Neutronics’ (17.4.2014)

- Section 4.1: The codes `Monteburns` [59] and `TRITON` [67] do not use Algorithm 3. They use Algorithm 7 below, where N_{iter} is 0 for `TRITON` and an input parameter, usually set to 0 or 1, for `Monteburns`. `Monteburns` also performs one additional iteration on the first step. Note that Refs. 92 and 93 incorrectly call Algorithm 3 ‘the Monteburns method’ while referencing the `Monteburns` code.
- Section 4.1: The claim that Algorithm 3 is commonly called ‘the midpoint method’ is incorrect. The name has been used for both Algorithms 3 and 7. Hence it cannot be considered an established name for either.
- Section 4.1: Another prior method is missing. It works as Algorithm 2 except that on the predictor it uses ϕ_i^{P} from the previous step. The method thus requires only one neutronics solution per step after the first. This is the principal method used in the deterministic `CASMO-4` and `CASMO-5` codes, although they have a more complex treatment for gadolinium. Note that Ref. [63] incorrectly claims that `CASMO-4` uses Algorithm 2.
- Section 4.4: The sentence “Two studies [92,93] comparing Algorithms 2 and 3 show the first one to be preferable.” is incorrect. The studies show Algorithm 3 to be preferable over Algorithm 2, not the other way around.

Algorithm 7

$\phi_{-1/2} \leftarrow \phi(x_0)$	% Bootstrap
for $i = 0, \ldots, I-1$ **do**	% Loop over steps
	% — Predictor 1—
$x_{i+1/2} \leftarrow e^{A(\phi_{i-1/2})(T_{i+1}-T_i)/2} x_i$	% Predicted midstep composition
$\phi_{i+1/2} \leftarrow \phi(x_{i+1/2})$	% Midstep neutronics
for $i = 1, \ldots, N_{\text{iter}}$ **do**	% — Iterate predictor —
$x_{i+1/2} \leftarrow e^{A(\phi_i)(T_{i+1}-T_i)/2} x_i$	% Predicted midstep composition
$\phi_{i+1/2} \leftarrow \phi(x_{i+1/2})$	% Midstep neutronics
end for	
	% — Corrector —
$x_{i+1} \leftarrow e^{A(\phi_{i+1/2})(T_{i+1}-T_i)} x_i$	% Corrected EOS composition
end for	