

## Accepted Manuscript

On the computation and physical interpretation of semi-positive reaction network invariants

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PII: S0098-1354(18)30603-3  
DOI: [10.1016/j.compchemeng.2018.06.009](https://doi.org/10.1016/j.compchemeng.2018.06.009)  
Reference: CACE 6135

To appear in: *Computers and Chemical Engineering*

Received date: 10 February 2018  
Revised date: 17 May 2018  
Accepted date: 10 June 2018

Please cite this article as: Aisha Alobaid, Hossein Salami, Raymond A. Adomaitis, On the computation and physical interpretation of semi-positive reaction network invariants, *Computers and Chemical Engineering* (2018), doi: [10.1016/j.compchemeng.2018.06.009](https://doi.org/10.1016/j.compchemeng.2018.06.009)

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## Highlights

- A species-reaction graph approach for extracting reaction invariants is presented
- Reaction invariants being semi-positive facilitate their physical interpretation
- Semi-positive invariants can signal potential defects in a reaction network
- An algorithm to automate the generation of the semi-positive invariants is presented
- This approach is applicable to different processes including atom free stoichiometries

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