

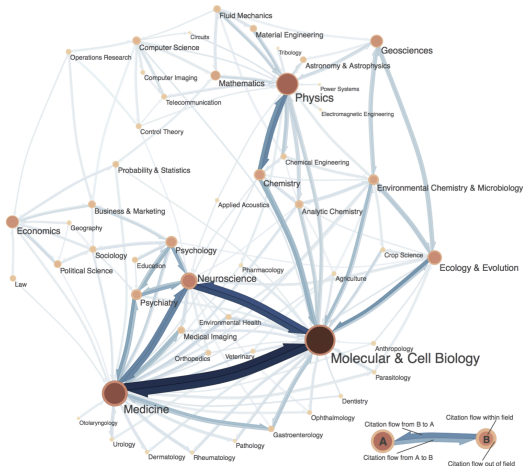
should you **(not) publish** in **computer science**?

Lovro Šubelj  
University of Ljubljana  
Faculty of Computer and  
Information Science

joint work with  
Dalibor Fiala  
University of West Bohemia  
Faculty of Applied Sciences

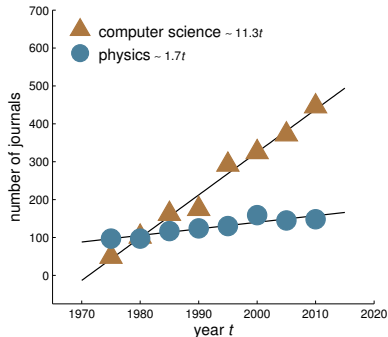
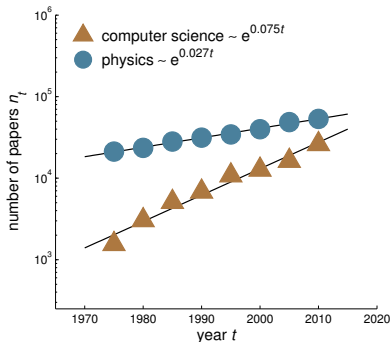
FRI '17

## map of **journals** in **Web of Science**



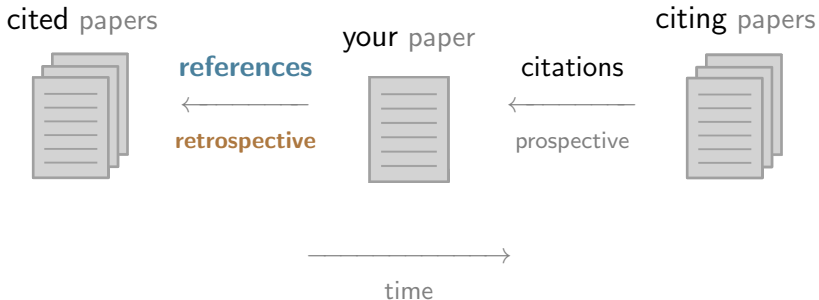
Rosvall, M., & Bergstrom, C.T. (2008) *P. Natl. Acad. Sci. USA*, **105**(4), 1118–1123.

## papers & journals evolution in Web of Science

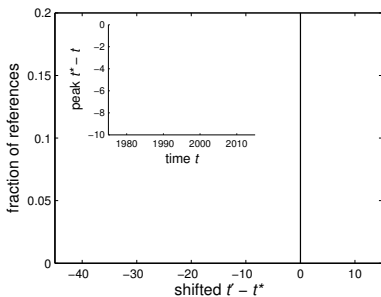
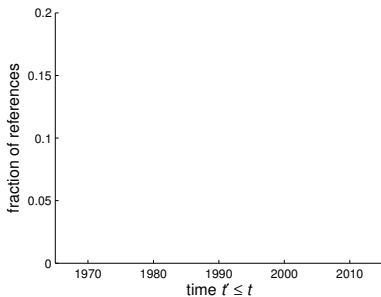


paper & citation growth well approximated by  $n_t \sim e^{\beta t}$

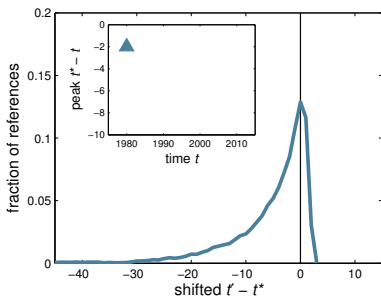
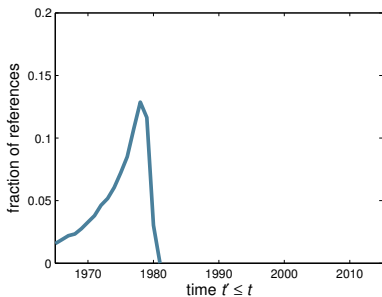
## paper **reference age** in **Web of Science**



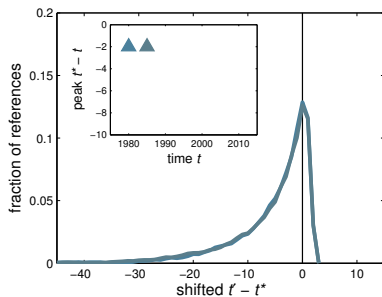
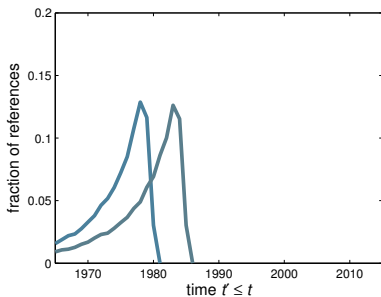
## paper reference distributions for physics



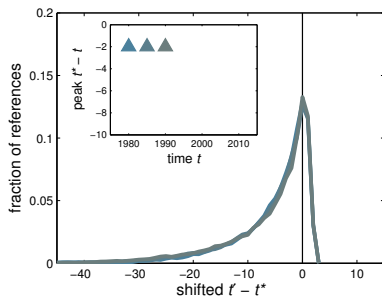
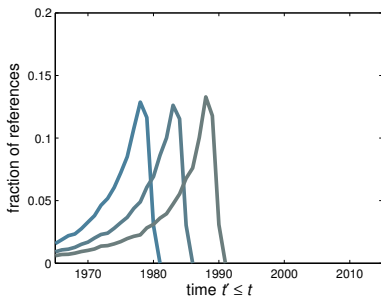
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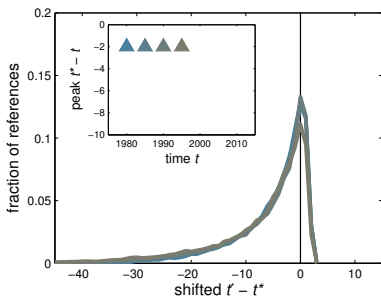
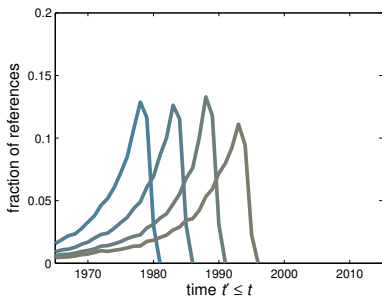


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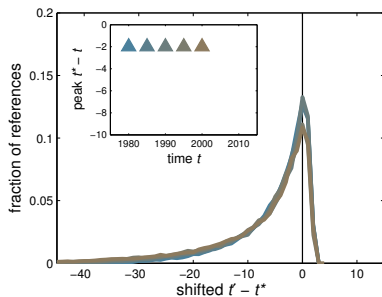
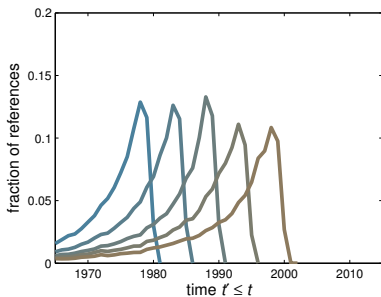




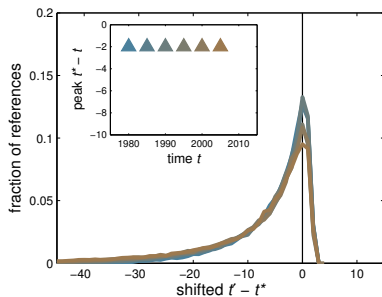
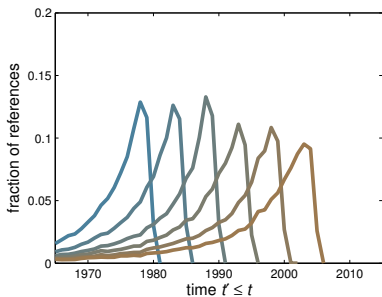
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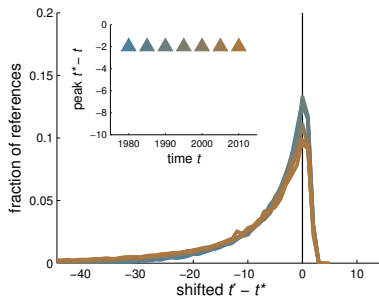
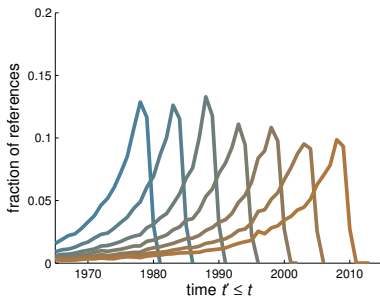
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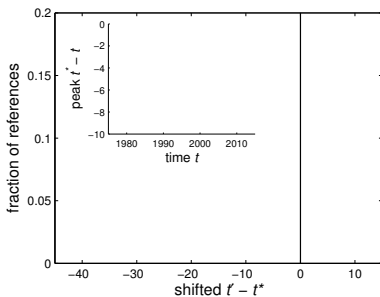
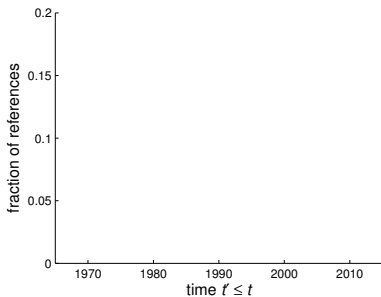


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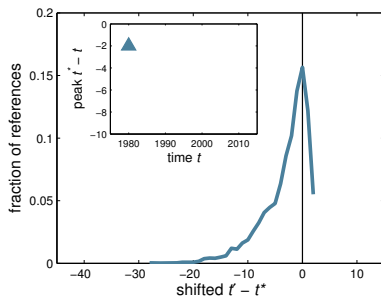
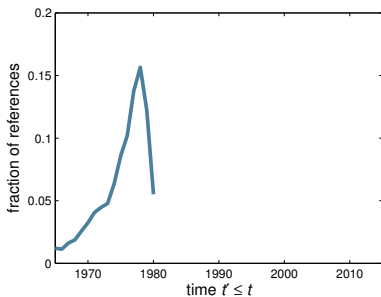


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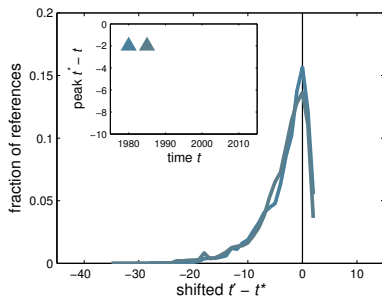
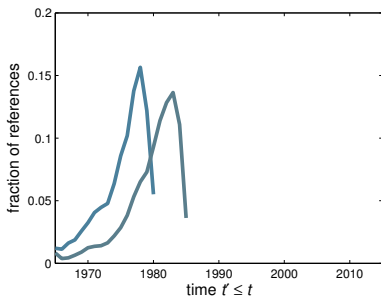
## paper reference distributions for computer science



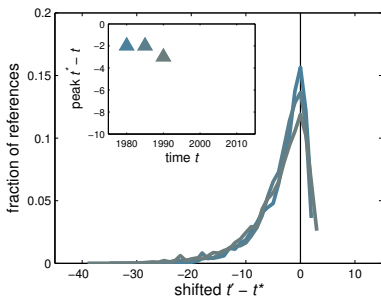
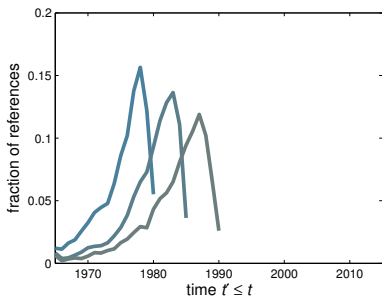
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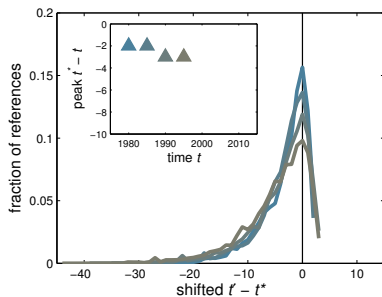
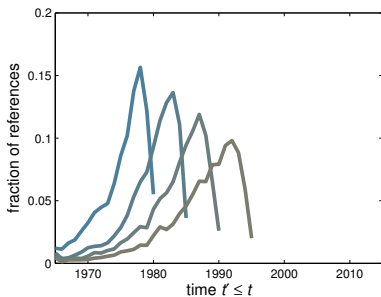


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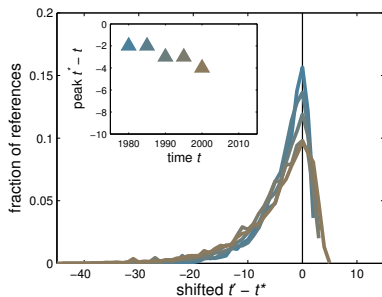
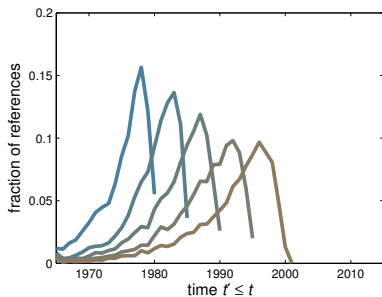




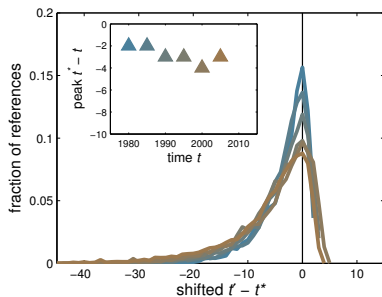
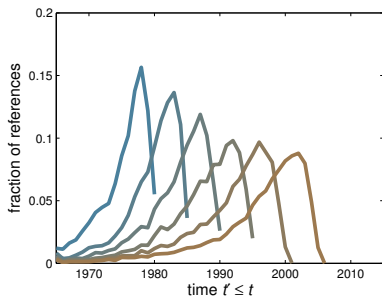
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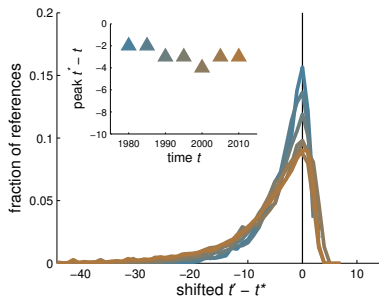
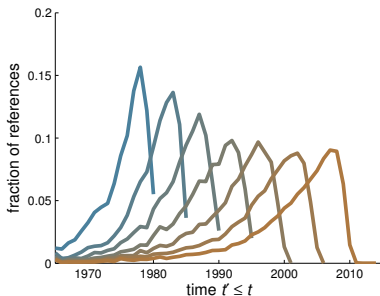
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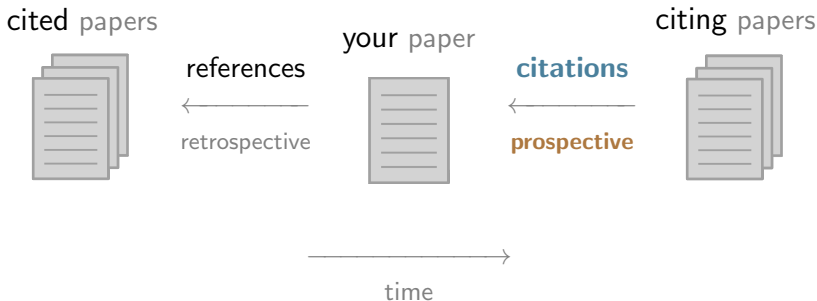


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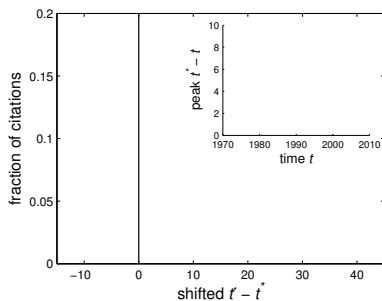
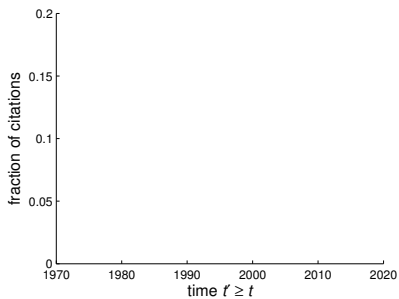


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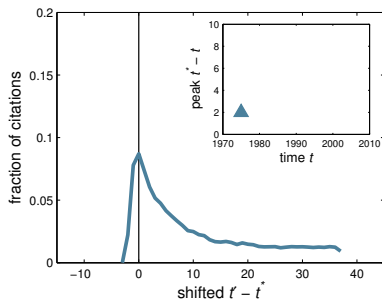
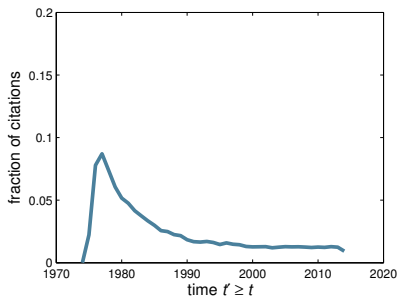
## paper **citation age** in **Web of Science**



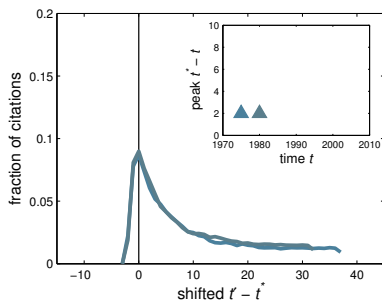
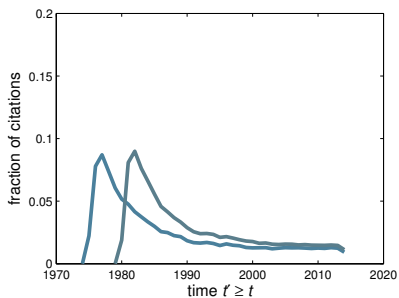
## paper citation distributions for physics



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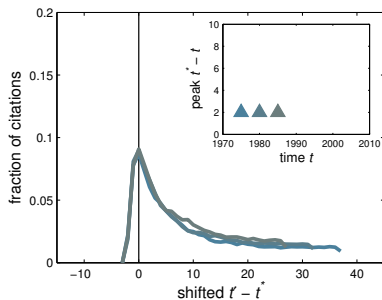
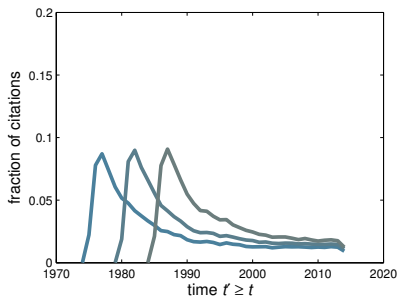


## paper citation distributions for physics

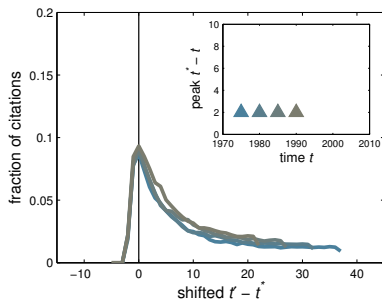
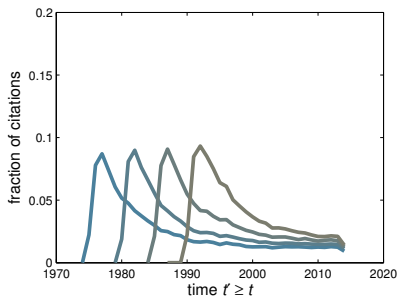




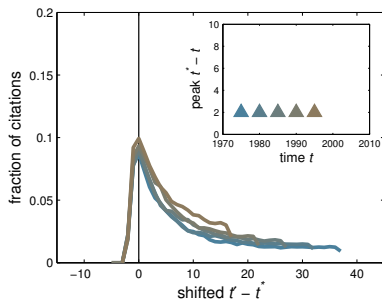
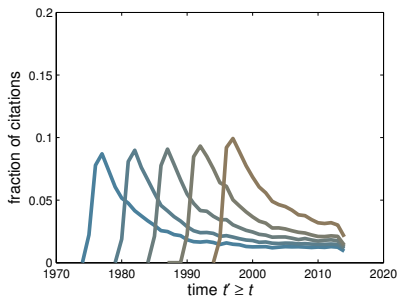
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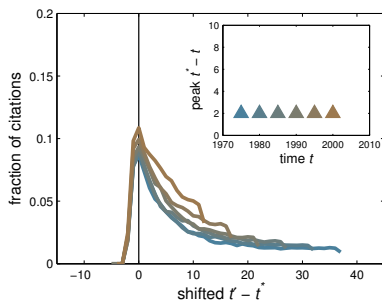
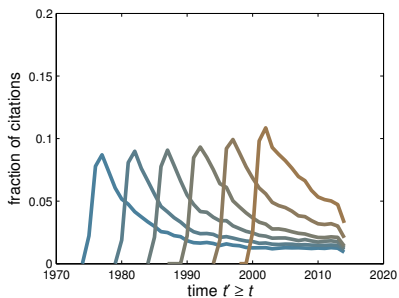
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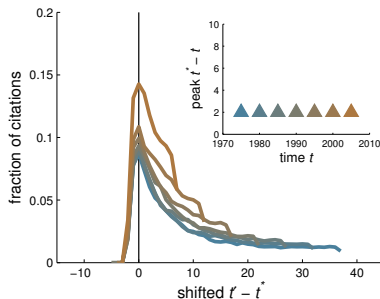
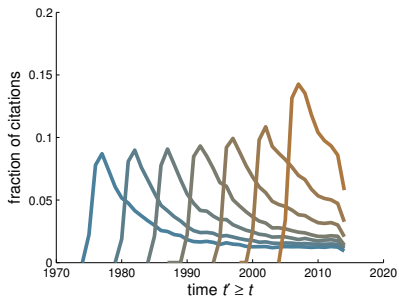
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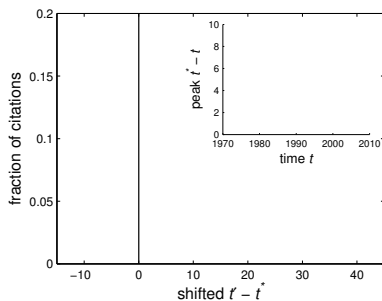
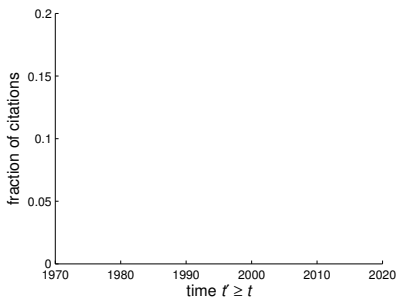


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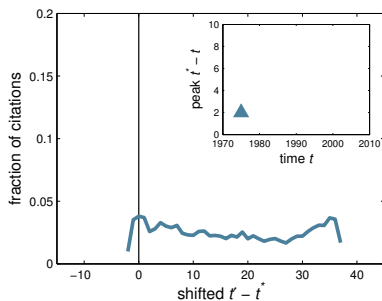
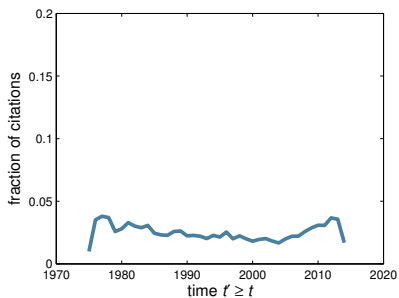


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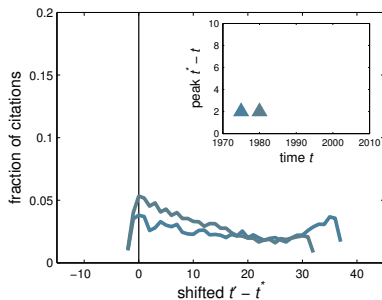
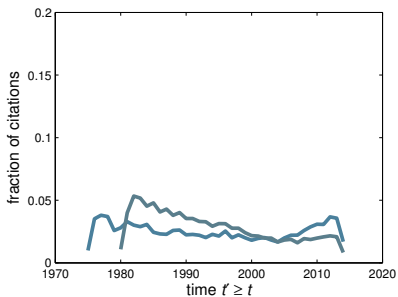
## paper citation distributions for computer science



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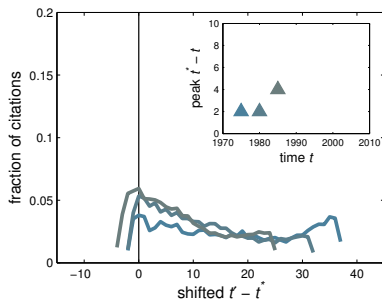
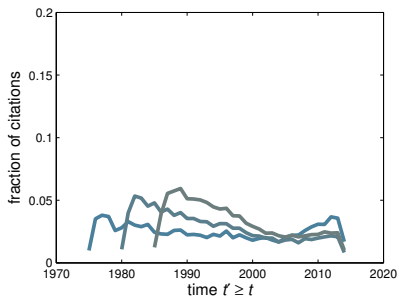


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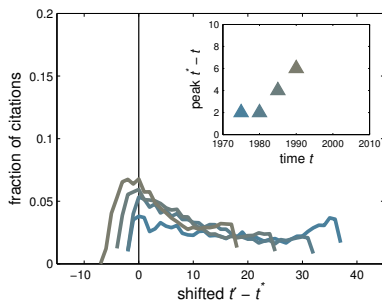
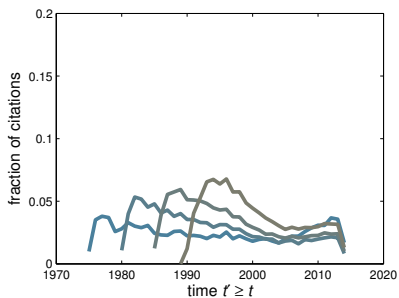




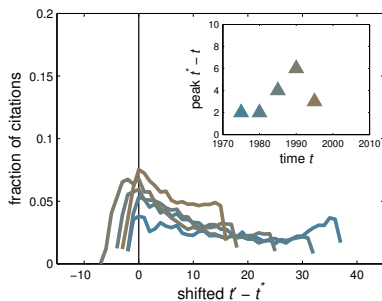
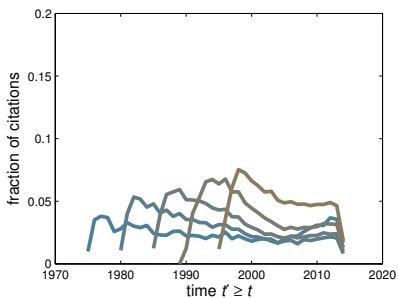
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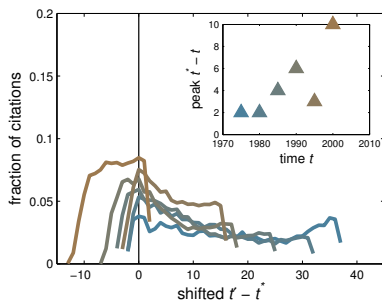
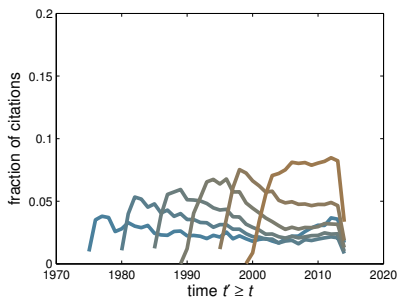
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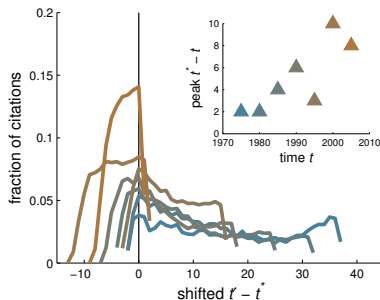
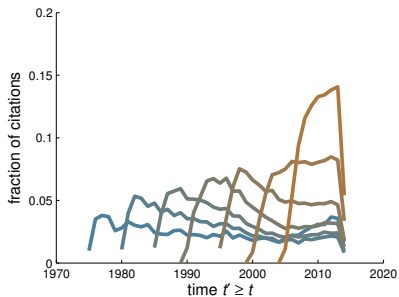
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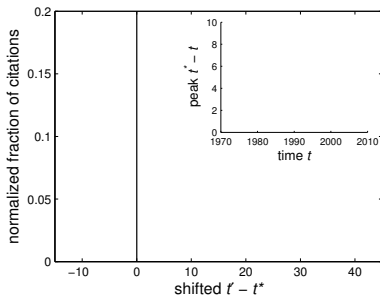
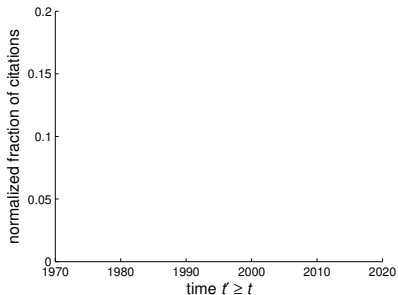
## paper citation distributions for computer science



for  $t' \geq 2000$  distributions are increasing functions of  $t'$

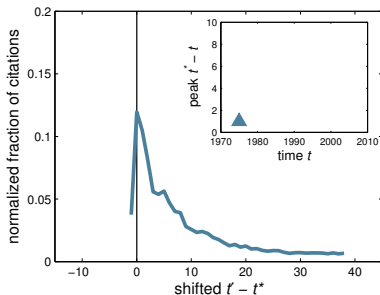
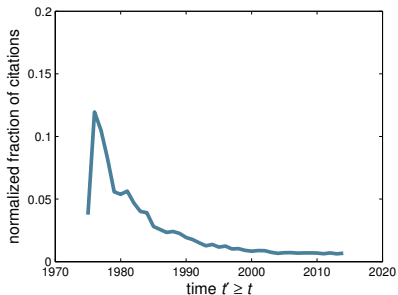
## normalized citation distributions for computer science

citations from papers in year  $t'$  count as  $1/n_{t'}$



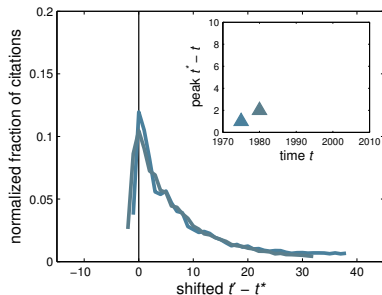
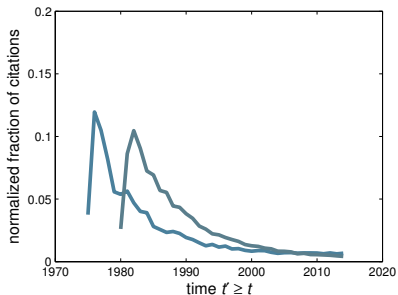
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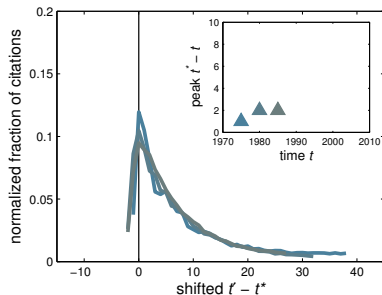
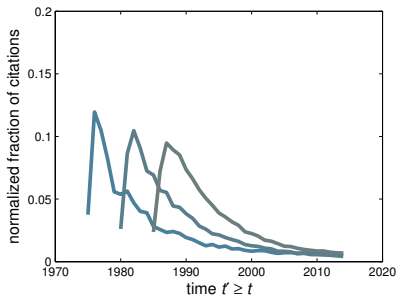
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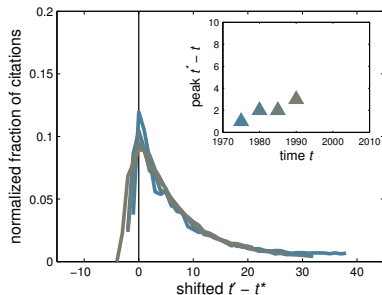
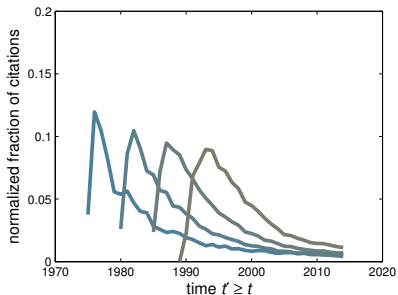
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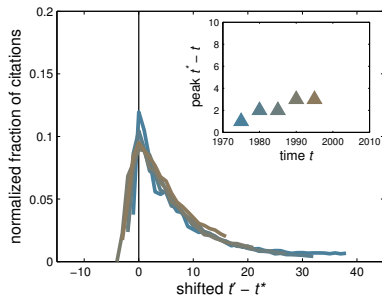
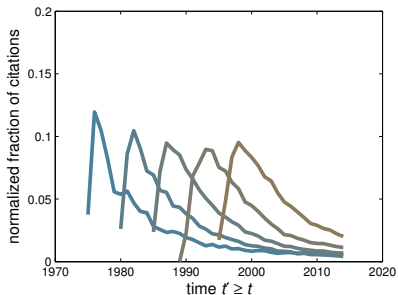
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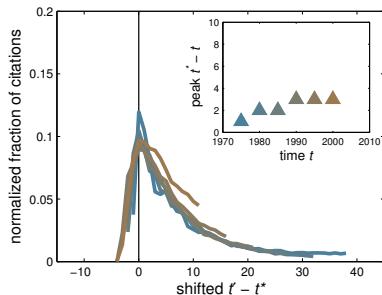
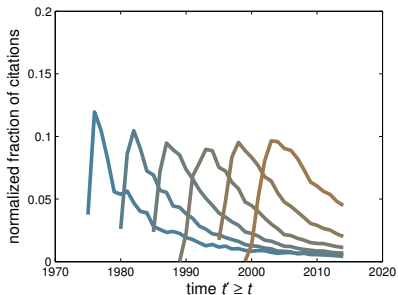
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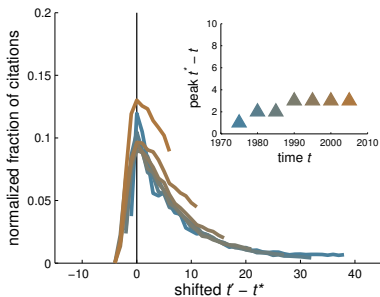
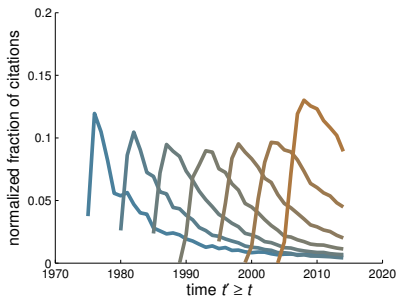
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## normalized citation distributions for computer science

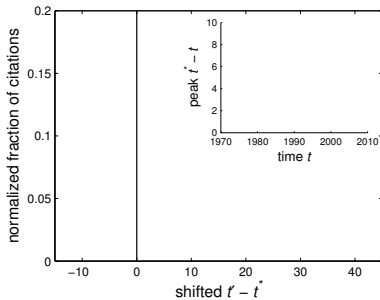
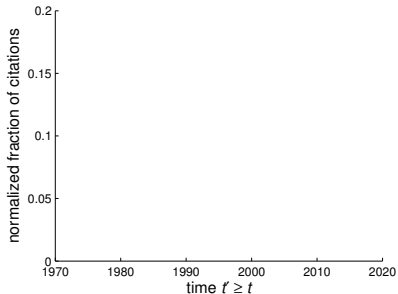
citations from papers in year  $t'$  count as  $1/n_{t'}$



for  $t' \geq t^*$  distributions well approximated by  $\sim \frac{1}{(t' - t)n_{t'}} e^{-(\ln(t' - t) - \mu)^2 / 2\sigma^2}$

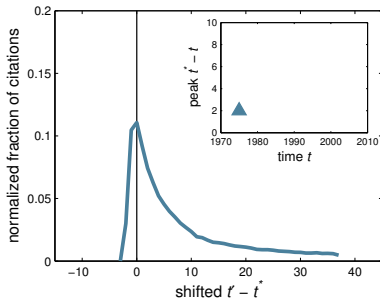
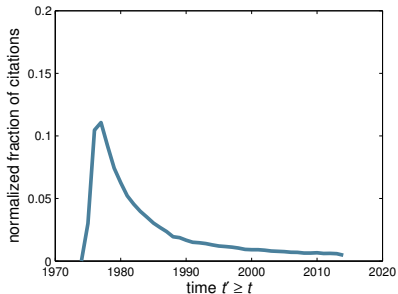
## normalized citation distributions for physics

citations from papers in year  $t'$  count as  $1/n_{t'}$



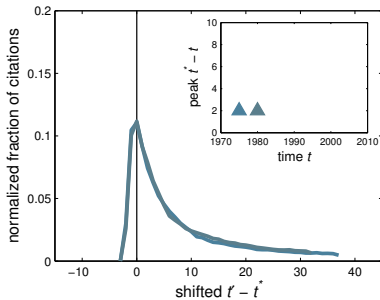
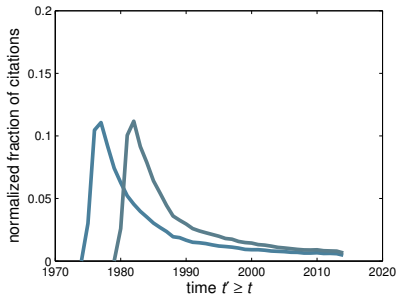
## normalized citation distributions for physics

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## normalized citation distributions for physics

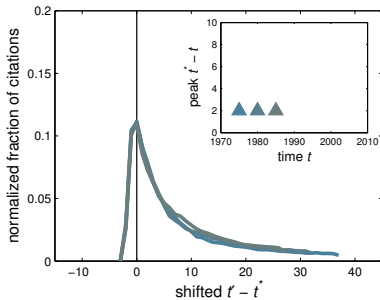
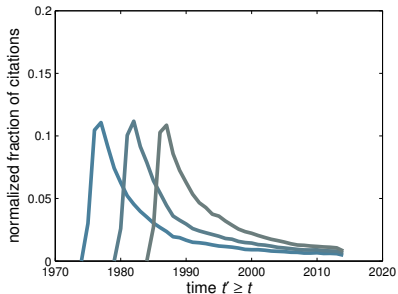
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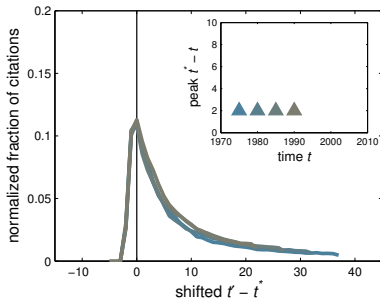
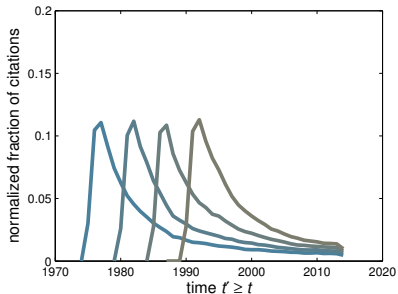
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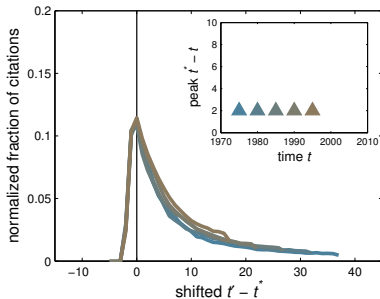
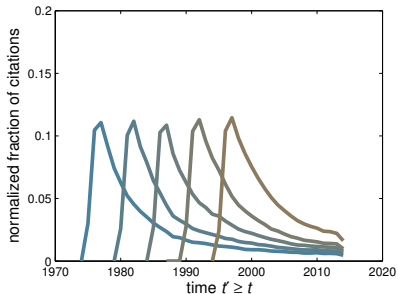
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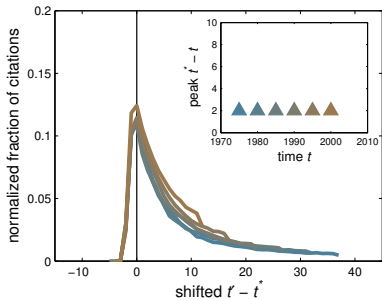
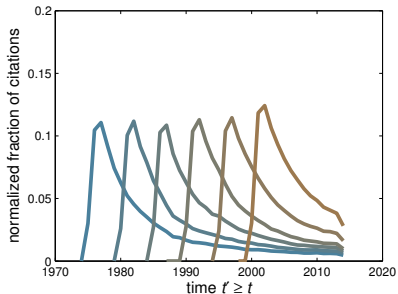
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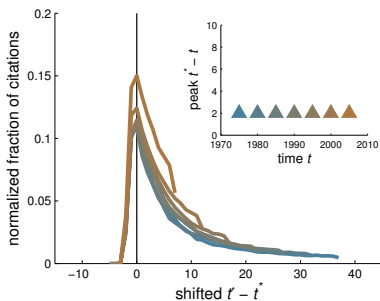
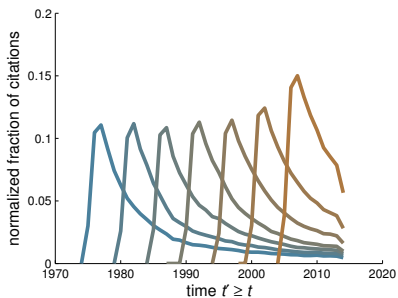
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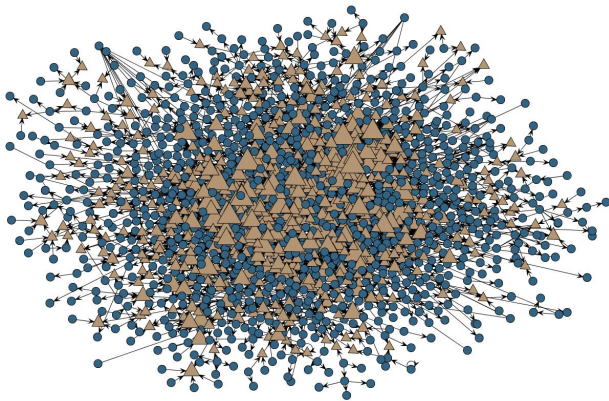
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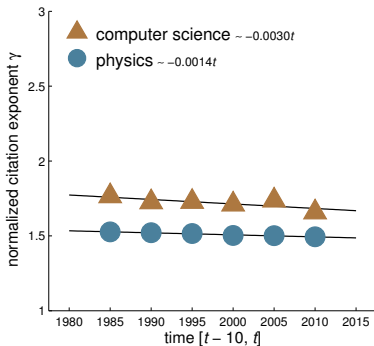
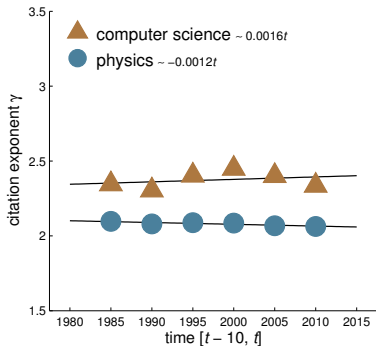
paper **citation network** from **Web of Science**



**triangles** proportional to number of citations  $c$  & **circles** few citations  $c \leq 1$

## paper citation exponents in Web of Science

citations from papers in year  $t'$  count as  $1/n_{t'}$



fraction of papers with  $c$  citations well approximated by  $\sim c^{-\gamma}$

## reference distributions

<sup>time</sup>  
→ constant through time in **Web of Science**

## citation distributions

<sup>time</sup>  
→ in **physics**, biochemistry, APS

<sup>time</sup>  
↔ in **computer science**, economics, i&ls

<sup>time</sup>  
→ after correction for paper & citation growth

should one (not) publish in computer science?



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Lovro Šubelj

University of Ljubljana

[lovro.subelj@fri.uni-lj.si](mailto:lovro.subelj@fri.uni-lj.si)

<http://lovro.lpt.fri.uni-lj.si>

Dalibor Fiala

University of West Bohemia

[dalfia@kiv.zcu.cz](mailto:dalfia@kiv.zcu.cz)

<http://www.kiv.zcu.cz/~dalfia>