

Abstract Submitted  
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**Excluded-volume interaction induced stiffness of comb polymer with densely grafted side-chains**<sup>1</sup> FENG QIU, Fudan University — Excluded-volume interaction has been widely recognized to cause expansion of polymer chain at large length scale. However, its effect on chain conformations at small length scale has been studied to less extent. Here we consider a comb polymer with its backbone densely grafted by side-chains as a model system. The method analogue to solving the electrostatic persistence length problem for either rigid or flexible polyelectrolytes is employed. For comb polymers with rigid backbone near the rod limit, the excluded-volume interaction induced persistence length scales linearly with the volume of the side-chain. While for flexible backbone, the persistence length depends on the side-chain volume more weakly. Field theoretic method that is relevant to address this problem is also explored and discussed.

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