A continuum description of polymer nematics - Invited Speaker

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I will present a few recent attempts to describe ordered states of long semi-flexible polymers in hard enclosures such as DNA in a bacteriophage capsids. I will illuminate several specific approaches to this problem: polymer physics formulation, simulations and finally the Landau - de Gennes (LdG) description.

I will show that the LdG description can not be straightforwardly transplanted into the world of polymer nematogens and that additional "continuity equations" have to be satisfied.

I will show how these equations can be derived in the framework of a vectorial and a tensorial description of polymer nematics and how they lead to different constraints on the nematic configurations of confined semiflexible polymers. I will present some results relevant for packing of DNA in bacteriophages.