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Random Networks of Semiflexible Polymers PANAYOTIS BENETATOS, ANNETTE ZIPPELIUS, Institute for Theoretical Physics, University of Goettingen — We present a semimicroscopic replica field theory of the formation of a random network built from wormlike chains. We consider permanent cross-links which fix the orientations of the corresponding filaments to be locally parallel, and we treat them as quenched disorder. We show that, upon increasing the cross-links in the fluid, an isotropic amorphous solid phase emerges, in which the orientations of the chains are frozen in random directions. A different transition to an orientationally ordered (nematic) phase is also possible.

Panayotis Benetatos
Institute for Theoretical Physics, University of Goettingen

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