1161-82-183 **Tetsuo Deguchi*** (deguchi@phys.ocha.ac.jp), Ohtsuka 2-1-1, Bunkyo-ku, Tokyo 112-8610, Japan. *Exact viscoelasticity of topological polymers and polymer networks via homology.* Preliminary report.

We show exact results on dynamical and viscoelastic properties of topological polymers and polymer networks through the Rouse dynamics by making an extensive use of their homological properties, which are part of topological properties. In particular, we rigorously express the stress of the polymers or networks in terms of the edge (or bond) vectors. The stress expression should be consistent with many polymer experiments such as those supporting the stress optical law. Here, let us explain about the background of this study: Recently complex polymers with their chemical connectivity expressed by graphs have been synthesized in chemistry. We call them topological polymers or graph-shaped polymers. We regard polymer networks as an extension of topological polymers. The edge vector is defined by the displacement or the difference of the position vectors of neighboring vertices (monomers) in a given topological polymer or polymer network. This presentation is in collaboration with Jason Cantarella, Clayton Shonkwiler, and Erica Uehara. (Received August 16, 2020)