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**Vladimir A. Volpert** and **Esteban Urdiales\*** (eu@u.northwestern.edu). *Stability of spherically propagating thermal frontal polymerization waves*. Preliminary report.

Frontal polymerization (FP) is the process in which monomers are converted into polymers by means of a spatially localized reaction zone. Thermal frontal polymerization (TFP) waves propagate due to heat released in chemical reactions. Spherically propagating TFP waves were first observed in experiments. After a brief period of ignition by an external UV source, the front begins to expand radially. Once the front attains a critical size, it becomes unstable, resulting in so called ‘spin modes’. These ‘spin modes’ are manifested as slightly raised regions that travel on the surface of the expanding spherical front. A basic solution is constructed which describes a spherically symmetric outward propagating front of radius  $R(\tau)$ . A stability analysis of the basic solution is then conducted. (Received September 15, 2009)