

3) Slow dynamics

If ε is sufficiently small ...

$$\dot{x}_{\text{ave}} \approx -\frac{f'_{\text{ave}}(x_{\text{ave}})}{f''_{\text{ave}}(x_{\text{ave}})} = -\frac{\sum_{i=1}^N f'_i(x_{\text{ave}})}{\sum_{i=1}^N f''_i(x_{\text{ave}})}$$

i.e. a *continuous-time Newton-Raphson strategy*

Other important properties

- do not require topological knowledge / agents synchronization
- robust to numerical error and communication noise