

Key Observation: stochastic strategy

For far-quadratic objective functions

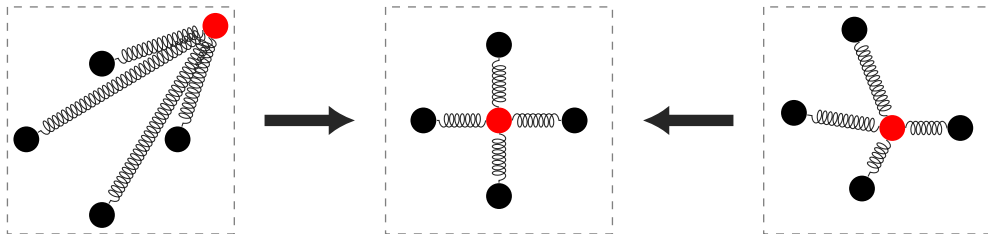
✓ **SGD** excels at rough optimization

✗ **L-BFGS** is ineffective for this case
 $\mathcal{O}(|V|^2)$ per iteration is too expensive

For near-quadratic objective functions

✓ **L-BFGS** excels at precise optimization

✗ **SGD** is ineffective for this case
it is too easy to find a locally optimal solution



(FR アルゴリズムは L-BFGS に近いが、前者が苦手なことは「ねじれ」の問題として知られている)

Key Technique 1: Separation of the objective function

$$\text{stress} = \sum_{i < j} f_{i,j}(d_{i,j}) = \sum_{(i,j) \in E} f_{i,j}^a(d_{i,j}) + \sum_{i < j} f_{i,j}^r(d_{i,j})$$

- (これはあくまで前座 本題は Key Technique 2 です)
- (この辺りは本当に全部丸茂先生が仰っていた通りです)
- SA based close