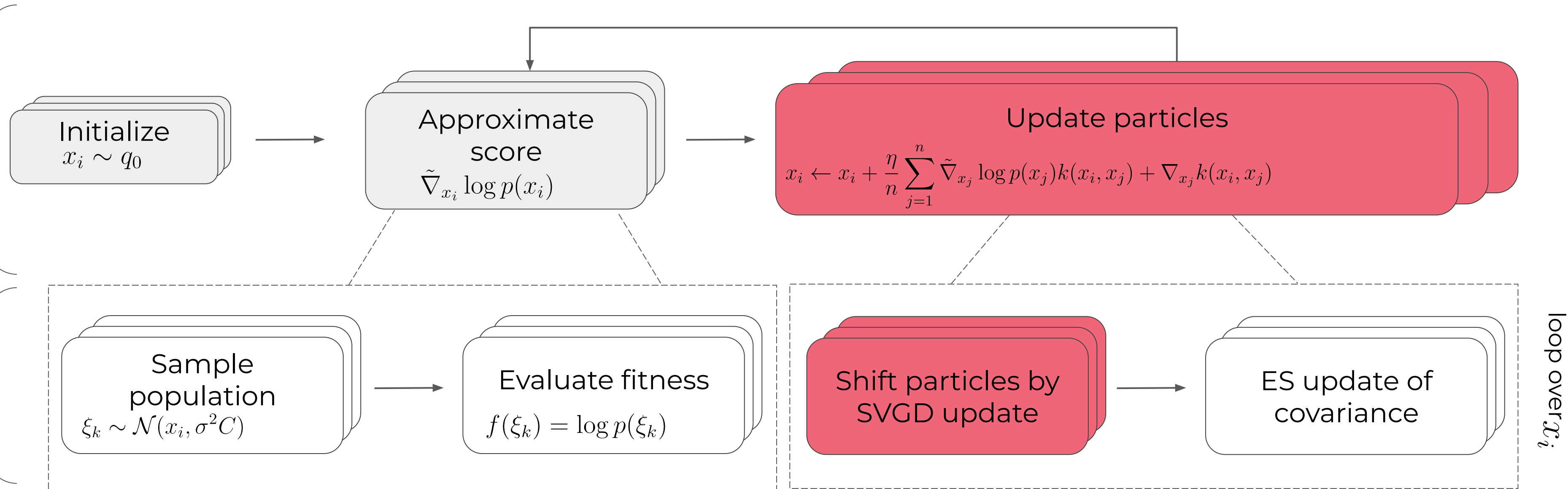
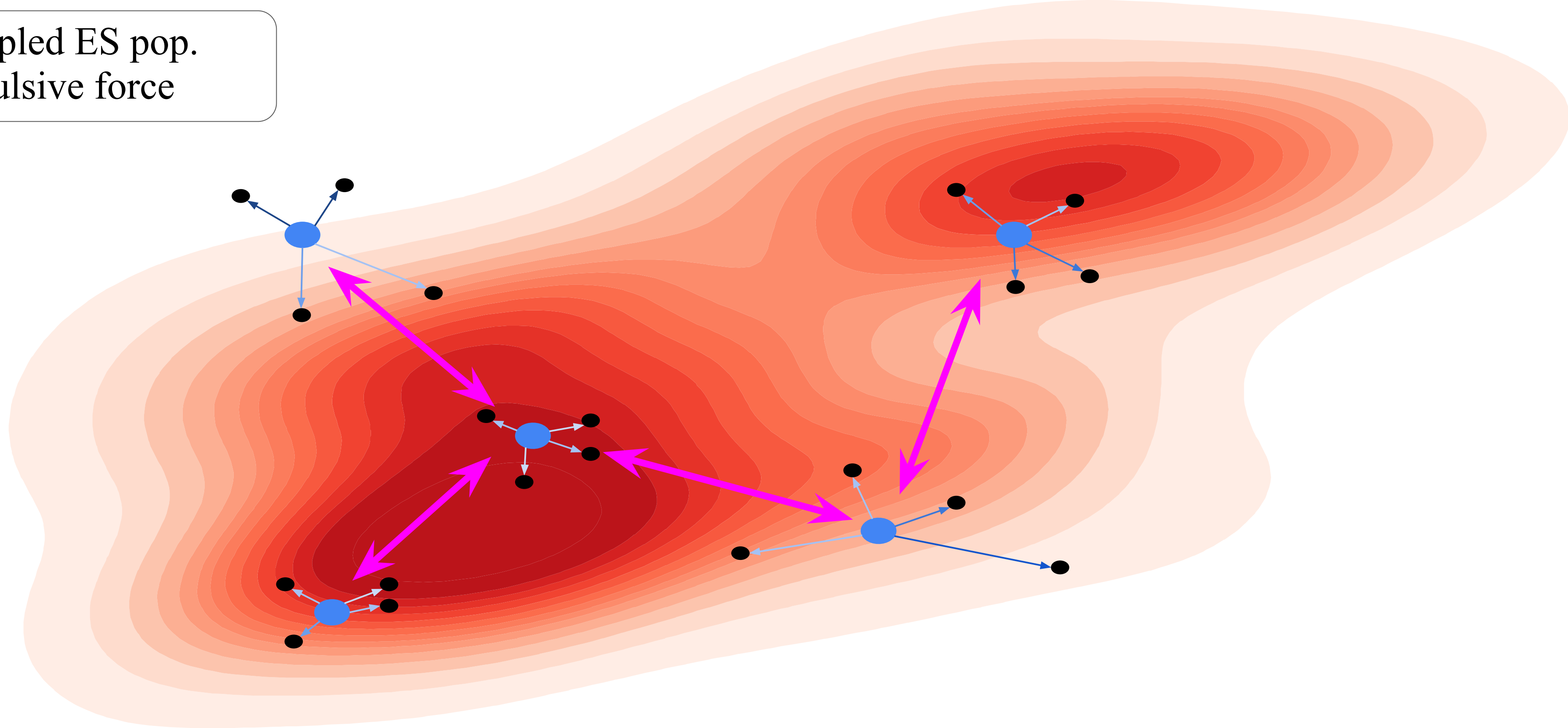
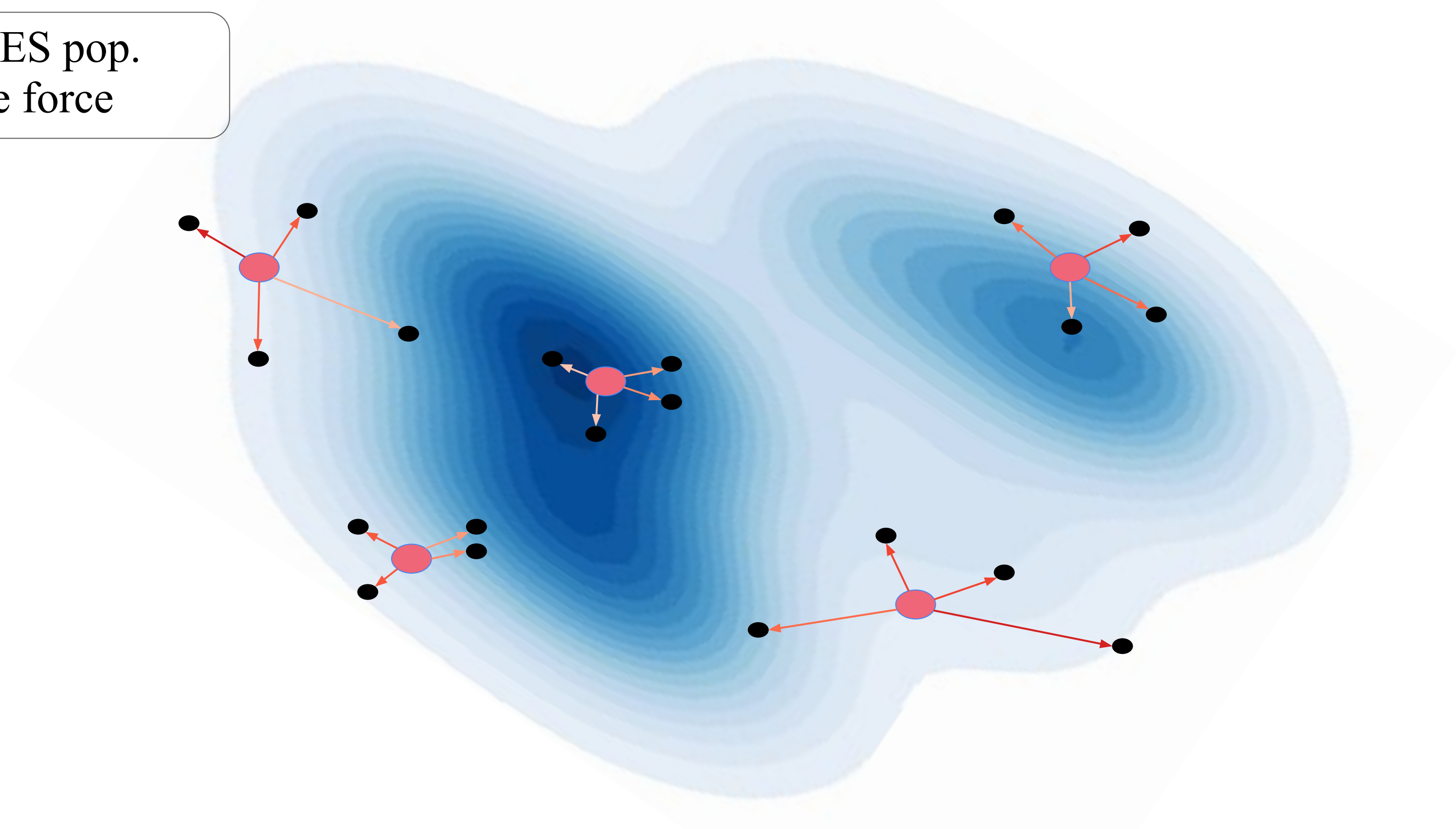


High level: SVGD

Low level: ES

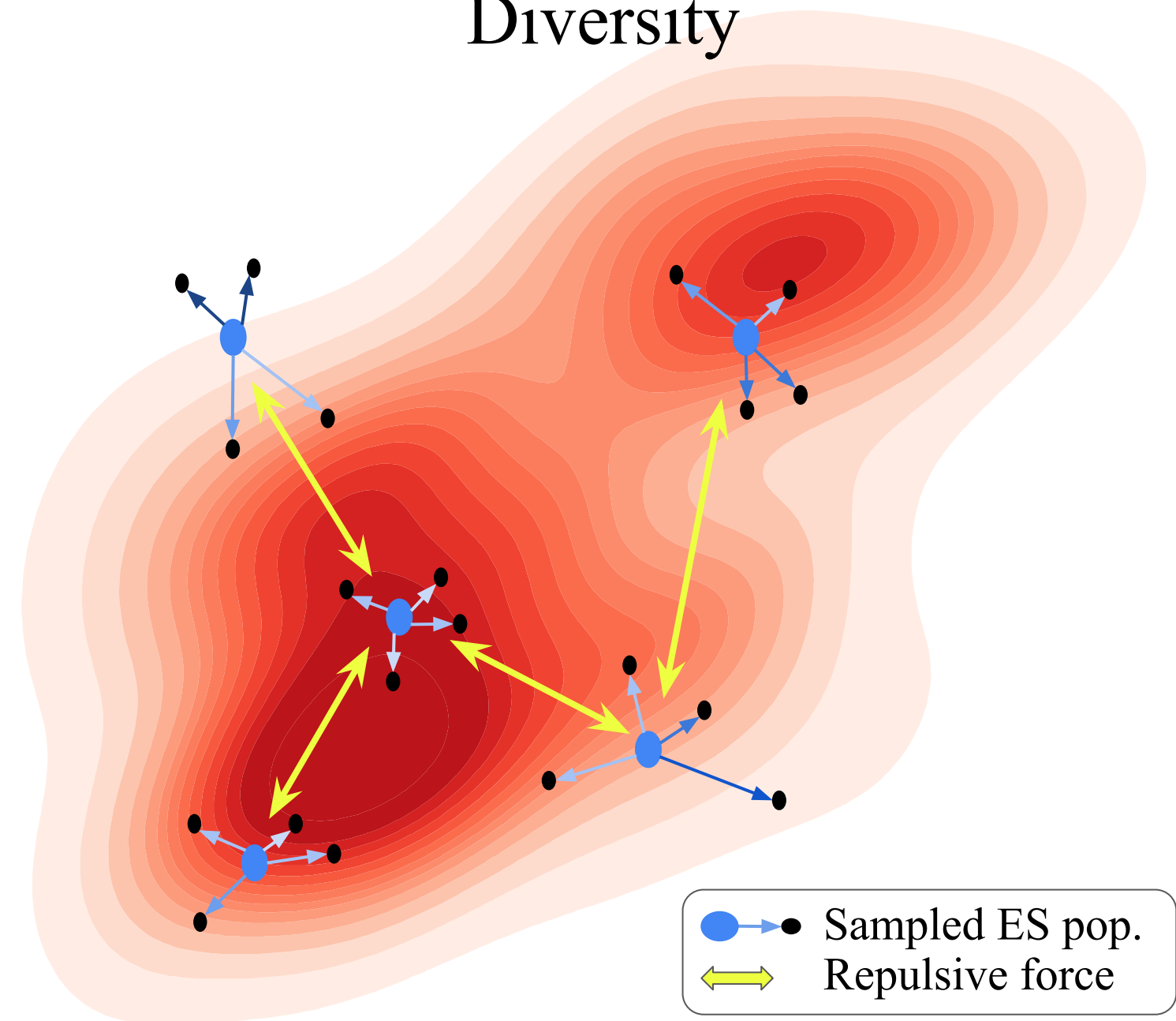






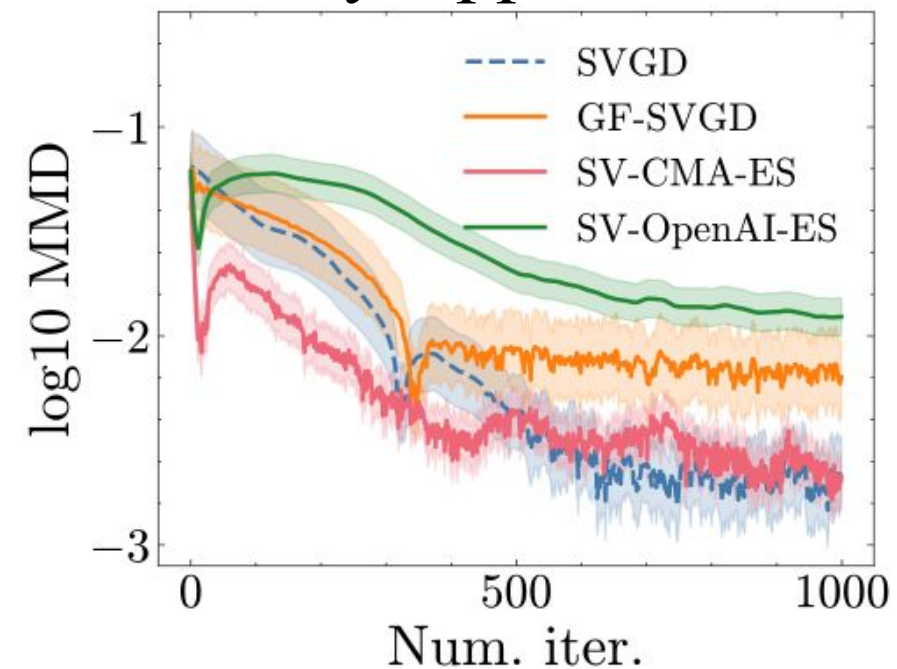


# a) Stein Variational CMA-ES (SV-CMA-ES): Multiple ES Populations Optimize Fitness and Diversity

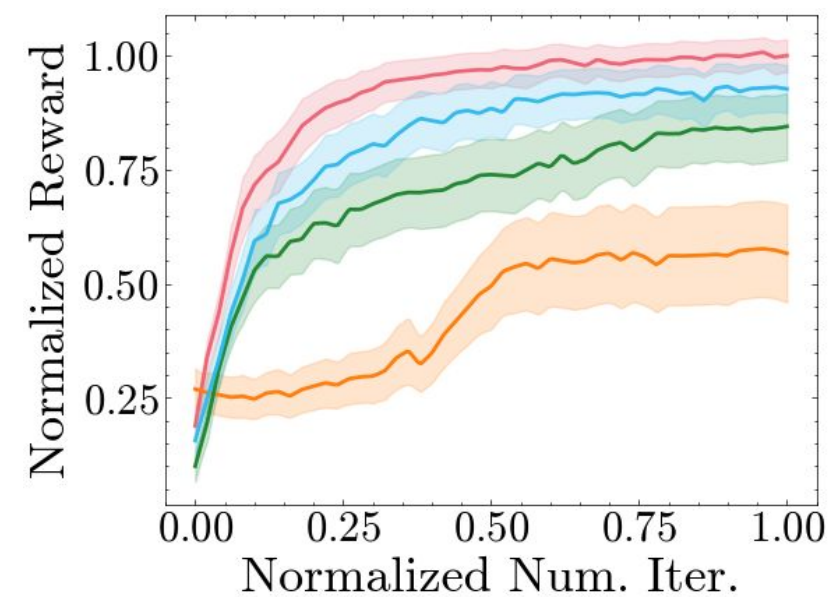


# b) Qualitative Performance

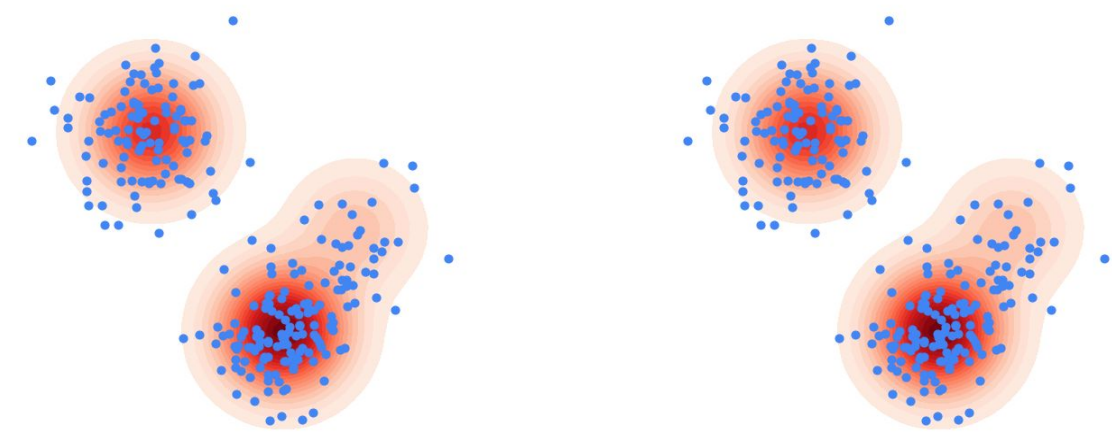
## Density Approximation



## Reinforcement Learning

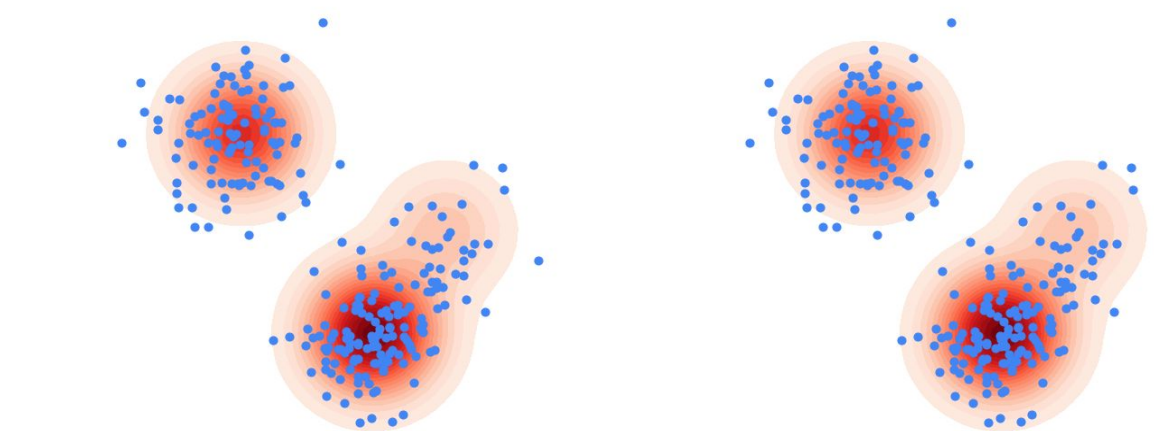


# c) Qualitative Performance: Solution Quality & Diversity



Ground Truth

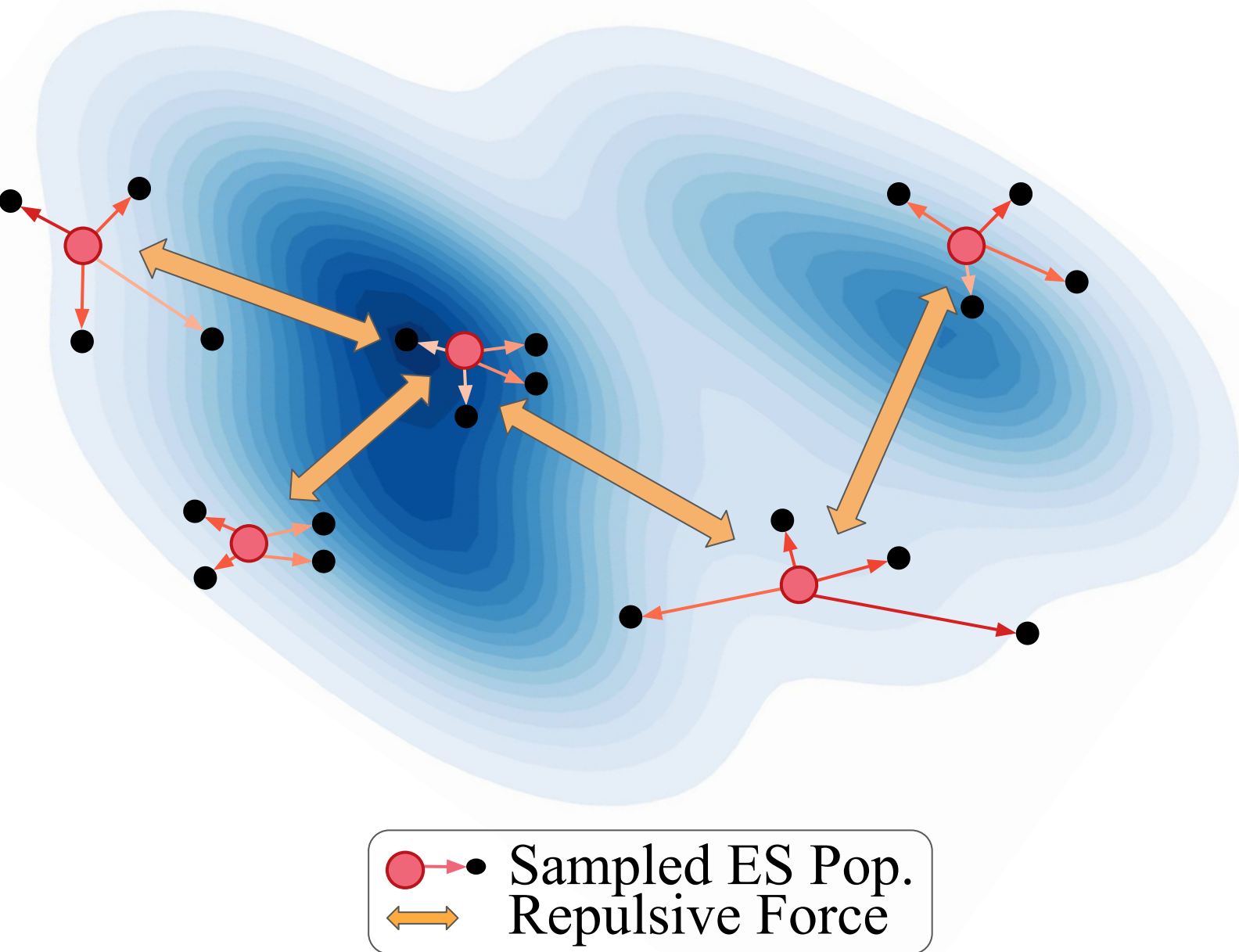
CMA-ES



Multi-Pop. CMA-ES  
(kernel-free)

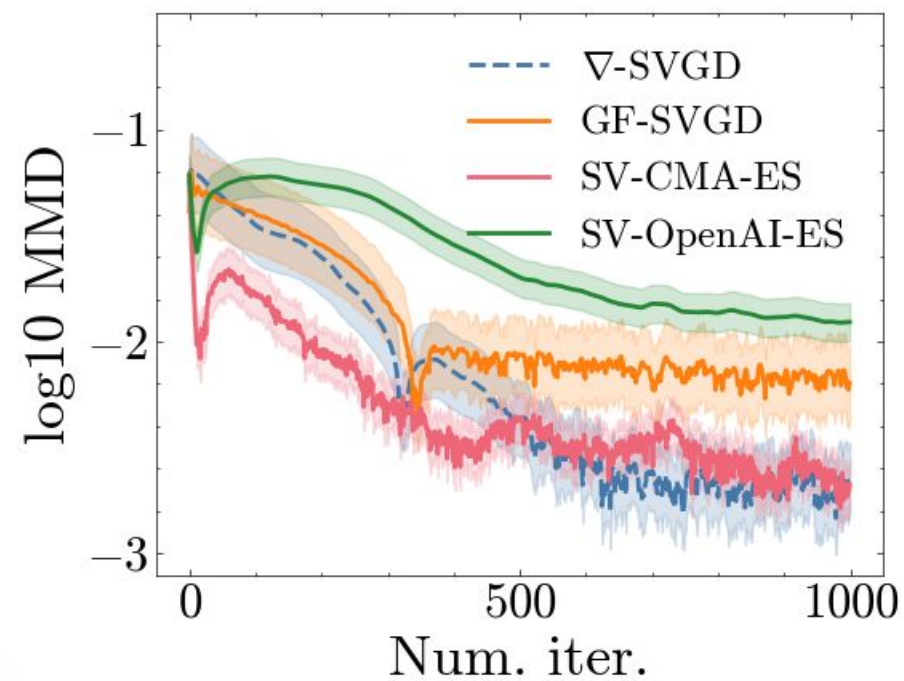
SV-CMA-ES

### a) Stein Variational CMA-ES (SV-CMA-ES): Multiple ES Populations Optimize Fitness and Diversity

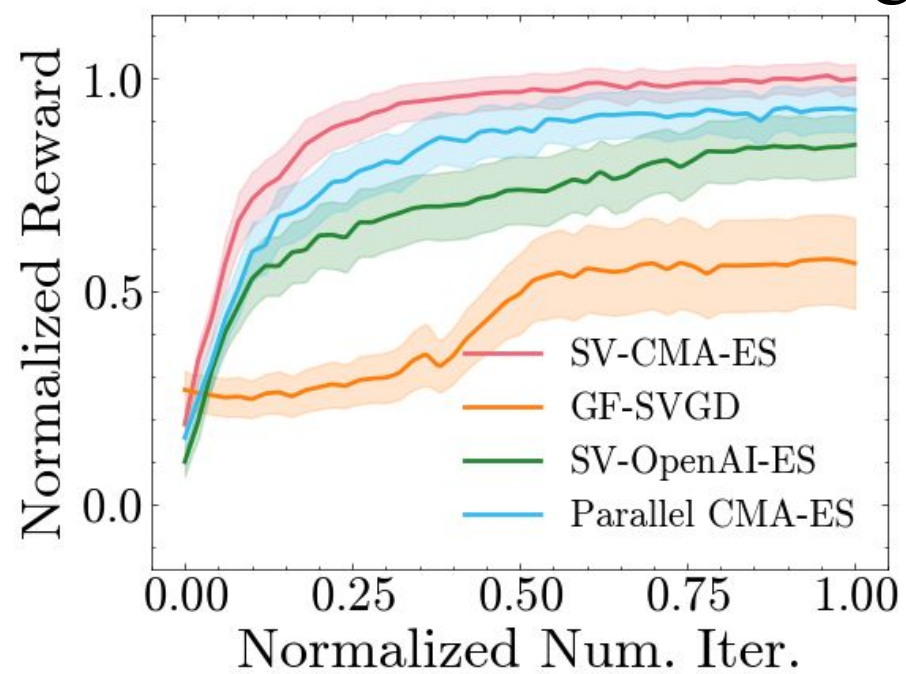


### b) Quantitative Performance

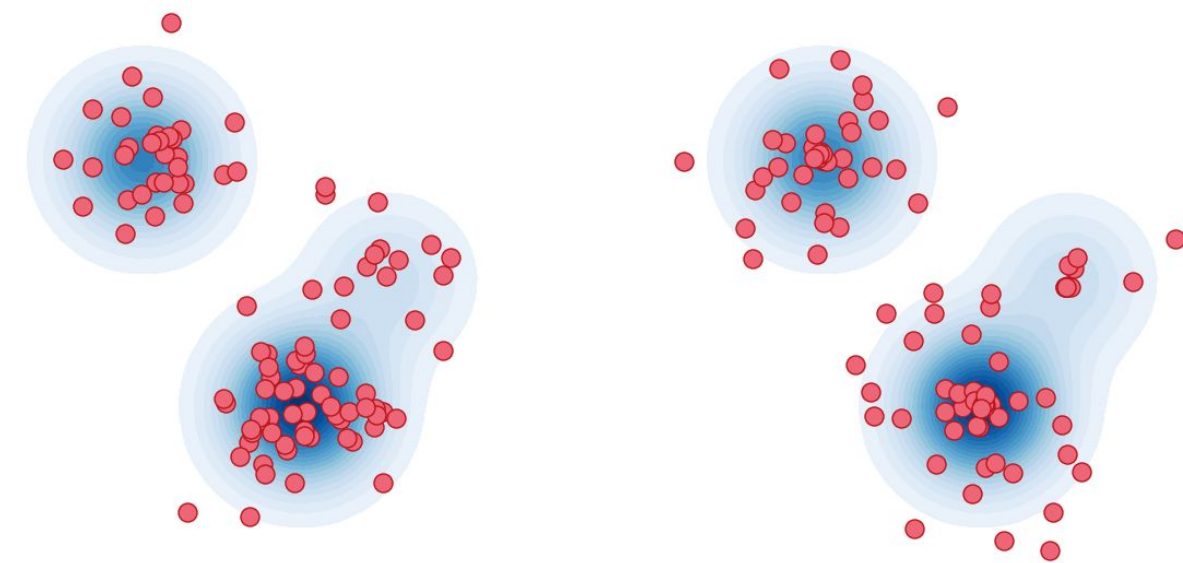
Density Approximation



Reinforcement Learning

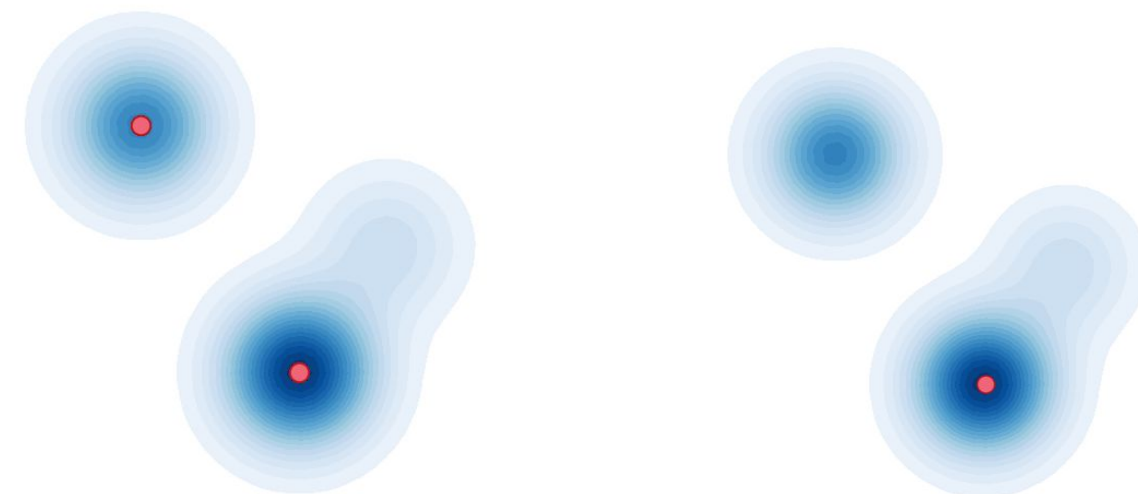


### c) Qualitative Performance: Solution Quality & Diversity



Ground Truth

SV-CMA-ES

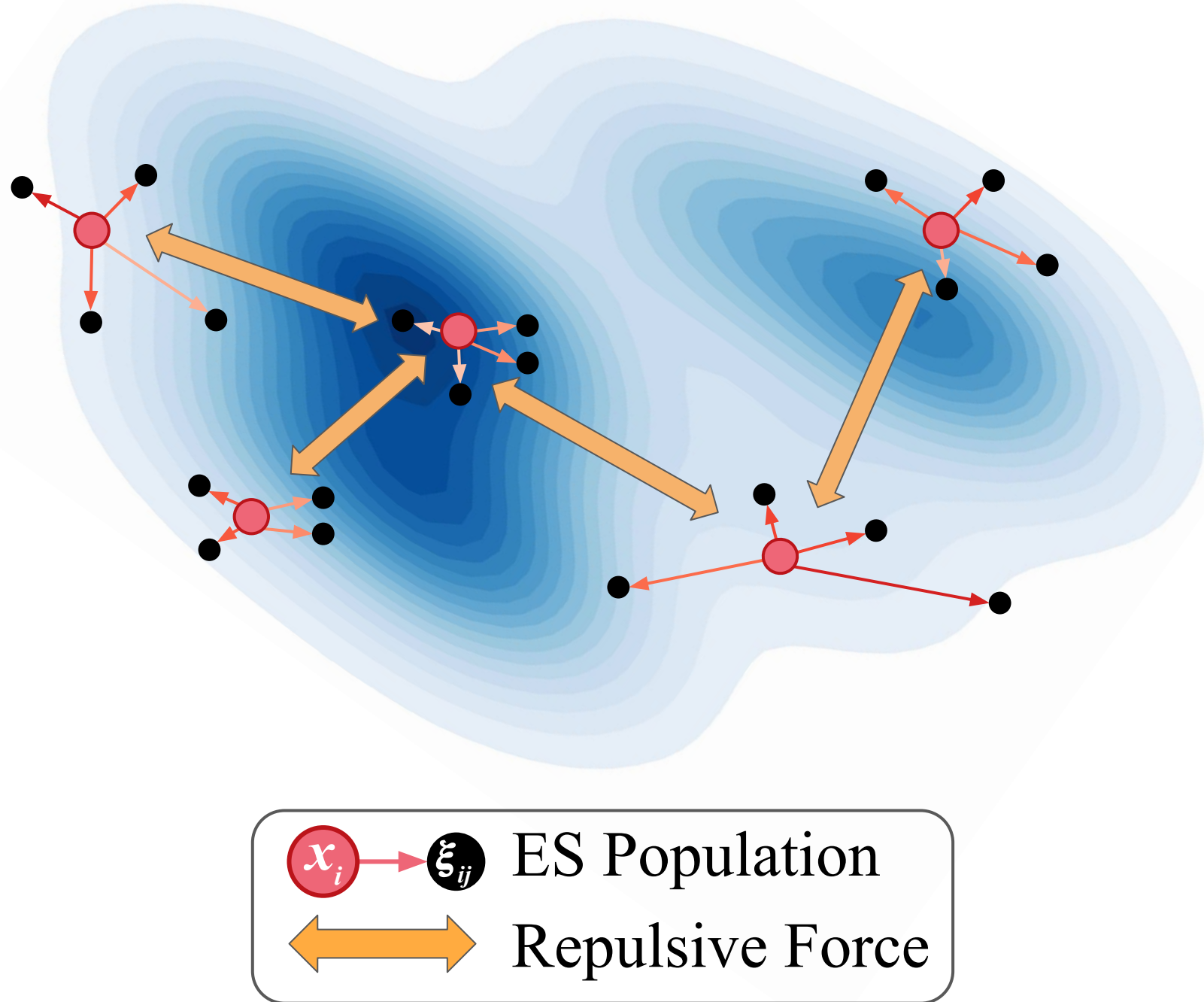


Multi-Pop. CMA-ES  
(kernel-free)

CMA-ES

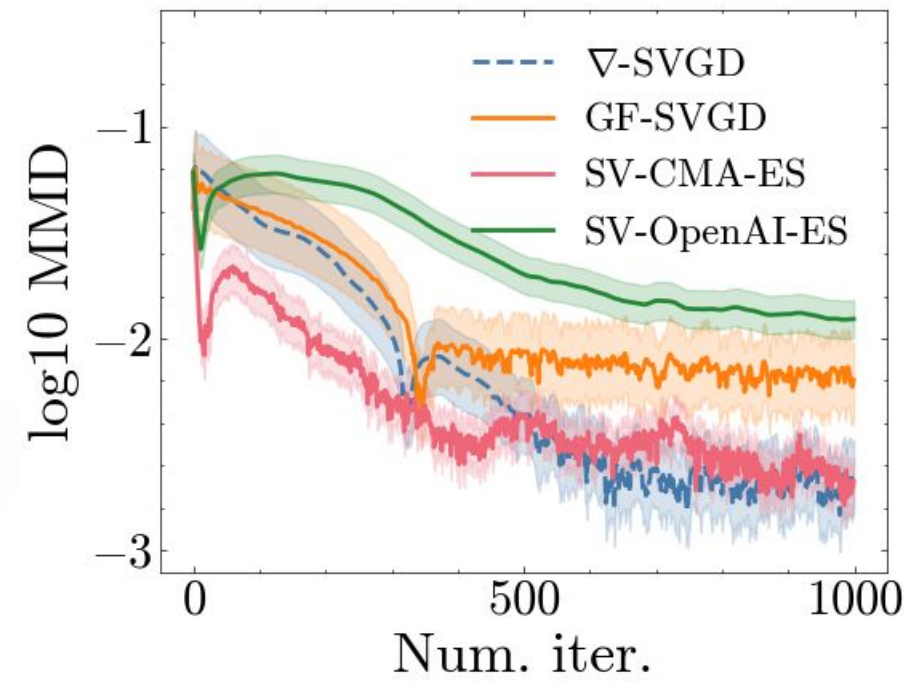


**a) Stein Variational CMA-ES (SV-CMA-ES):** Multiple ES Populations Optimize Fitness and Diversity

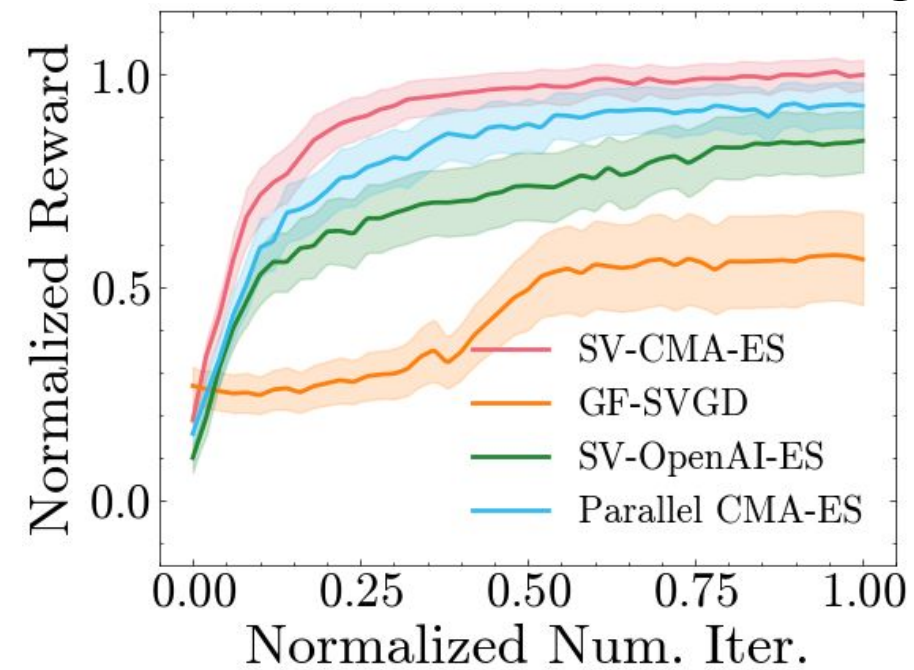


**b) Quantitative Performance**

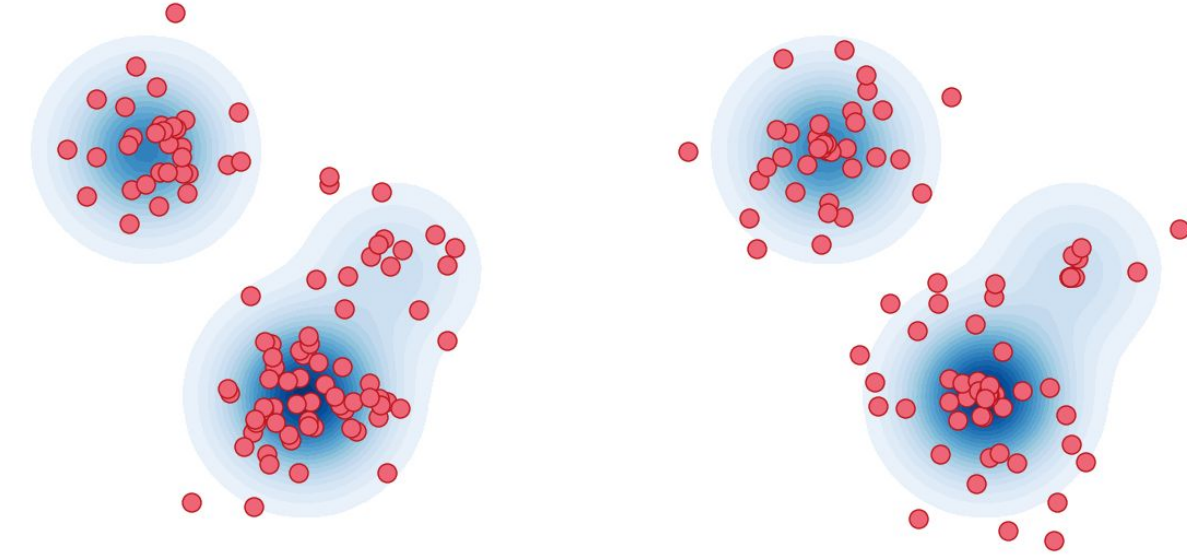
Density Approximation



Reinforcement Learning

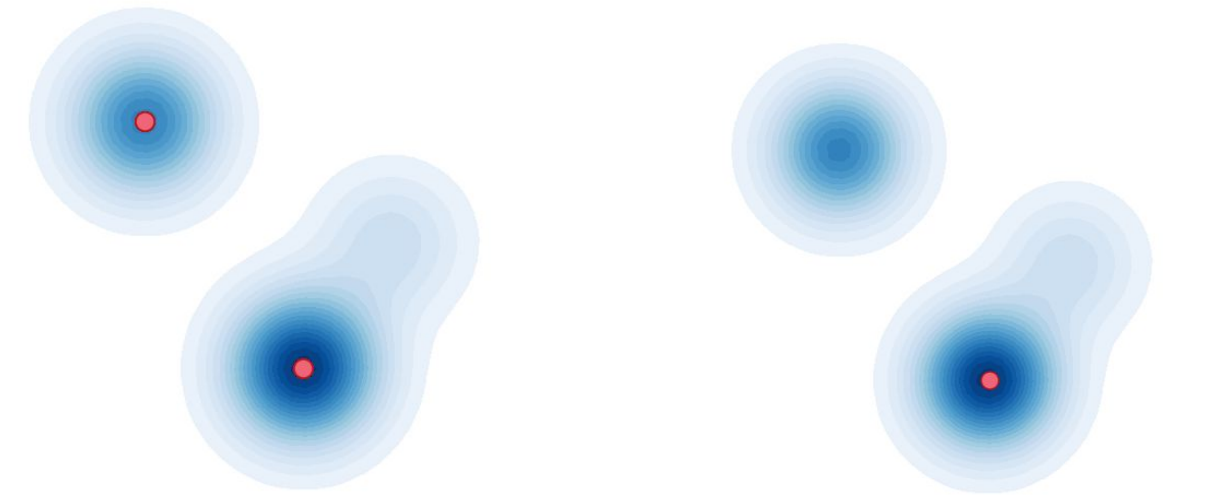


**c) Qualitative Performance:** Solution Quality & Diversity



Ground Truth

SV-CMA-ES



Multi-Pop. CMA-ES  
(kernel-free)

CMA-ES