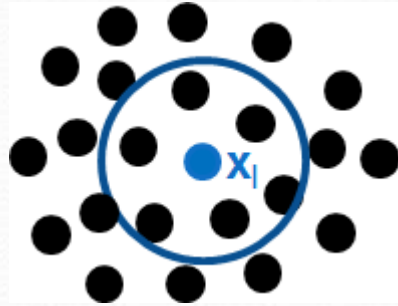
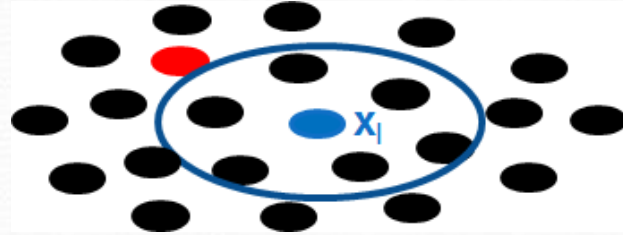


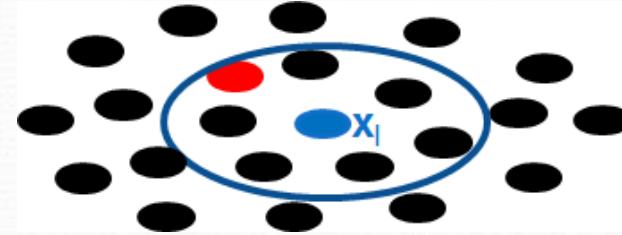
Meshfree Kernels



Initial

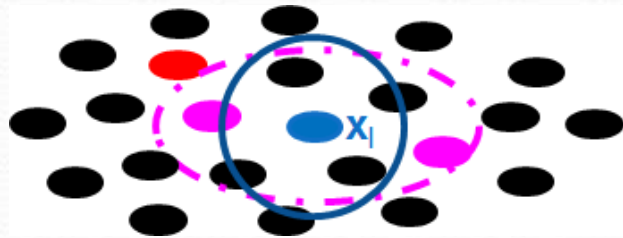


Total Lagrangian:
Neighbors defined on initial configuration, no update.
Accurate!

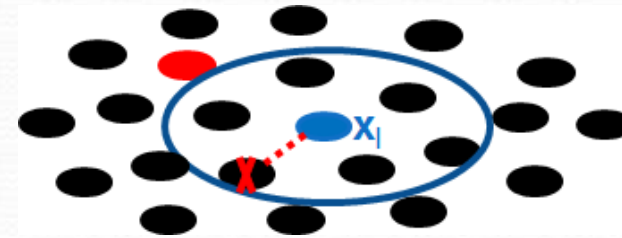


Updated Lagrangian:
Use deformed support to search neighbor particles on deformed configuration.

Meshfree support:
The compact region that the kernel function is NOT zero!



Eulerian:
Use **undeformed** support to search neighbor particles on deformed configuration.



Pseudo Lagrangian:
Neighbors defined on initial configuration, but might be lessened due to bond break.
Efficient and stable!

Application of Different Kernels

Kernel	Application	Examples
Total Lagrangian	Non-failure analysis	Small deformation:
Updated Lagrangian	Low speed tension failure or non-failure in metals	Large deformation: Metal tension, Taylor impact, blanking, SPR
Eulerian	Global failure in metals or solid fluids	Large and extreme deformation: Drilling, FDS, cutting, SPR, implosion
Semi-pseudo Lagrangian	Local failure in concrete, metals, composites	Extreme deformation: Machining, cutting, impact penetration