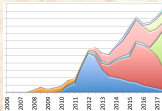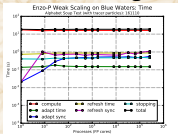# Petascale astrophysics, software infrastructure development, and community engagement

## 6. Next phase
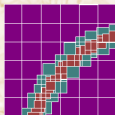


Exascale Enzo-E
strong scaling
heterogeneous
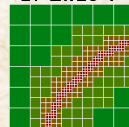
## 5. Scaling



256K BW cores
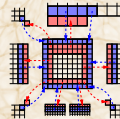hydro+tracer
≈ 98% || effic.
fully distributed
>> ENZO

## 1. ENZO
community developed
structured AMR
astrophysics & cosmology
powerful but scaling issues



## 4. Charm++
parallel programming system
data-driven / asynchronous
targeting Exascale apps.

## 2. Enzo-P



"Petascale Enzo"
ENZO physics
redesigned AMR
Cello framework

## 3. Cello



highly scalable
reusable framework
array of octrees
uses Charm++