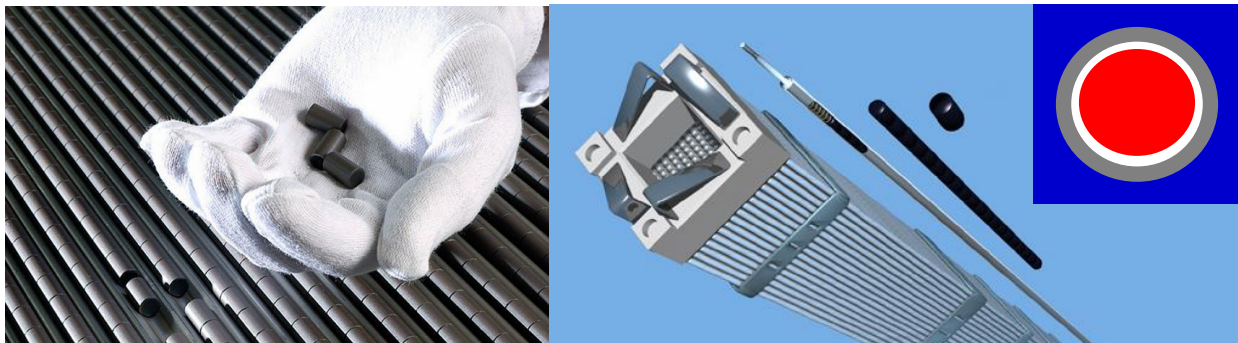


# #47 Thank to my graduate students **Dev Desai & Priyansh Bhimani** for their major contributions in this study

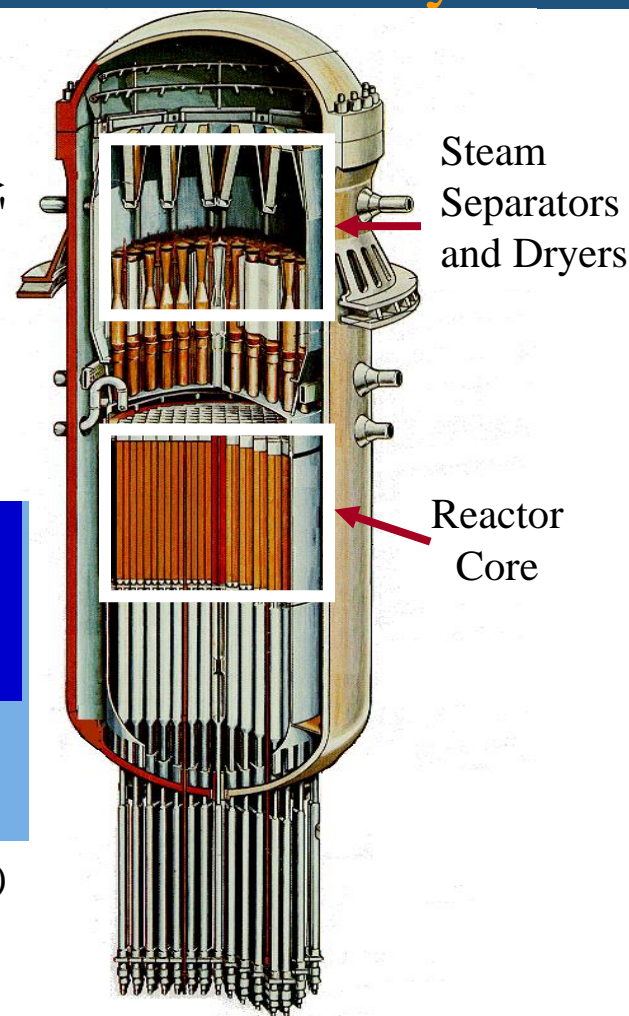
$$\vec{\Omega} \cdot \nabla \varphi(\vec{r}, \vec{\Omega}, E) + \Sigma_t(\vec{r}, \vec{\Omega}, E) \varphi(\vec{r}, \vec{\Omega}, E) = Q(\vec{r}, \vec{\Omega}, E)$$

$$Q(\vec{r}, \vec{\Omega}, E) = \int_0^\infty \int_0^\infty \Sigma_s(\vec{r}, \vec{\Omega}' \rightarrow \vec{\Omega}, E' \rightarrow E) \varphi(\vec{r}, \vec{\Omega}', E') dE' d\vec{\Omega}'$$

$$+ \frac{\chi(\vec{r}, E)}{4\pi k_{eff}} \int_0^\infty v \Sigma_f(\vec{r}, E') \int_0^\infty \varphi(\vec{r}, \vec{\Omega}', E') d\vec{\Omega}' dE'$$

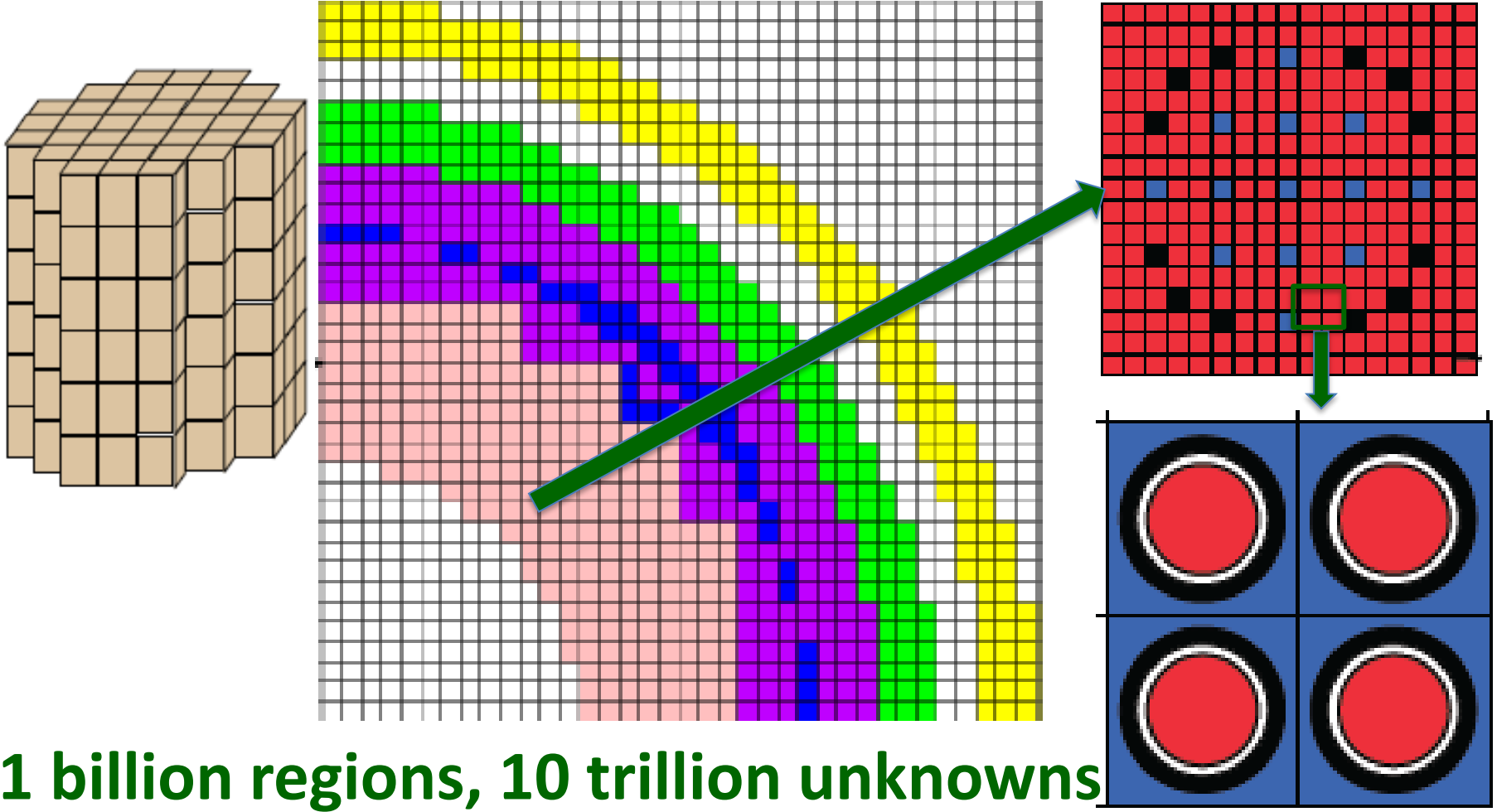


- Uranium fuel pellets are sealed inside zirconium alloy rod (fuel rod)
- About 236 fuel rods (+ other rods) in each fuel assembly
- About 200 fuel assemblies (+ other assemblies) in the reactor core



# #47

# Quarter PWR Core



**1 billion regions, 10 trillion unknowns**

