



# STREAM-SNF

## Code Introduction

### CONTACT

**Ulsan National Institute of Science and Technology**

**Address** 50 UNIST-gil, Ulju-gun, Ulsan, 44919, Korea  
**Tel.** +82 52 217 0114     **Web.** [www.unist.ac.kr](http://www.unist.ac.kr)

**CORE** Computational Reactor physics & Experiment lab  
**Tel.** +82 52 217 2940     **Web.** [reactorcore.unist.ac.kr](http://reactorcore.unist.ac.kr)

## I. Introduction

## II. UNIST-SNF Calculation Procedure

## III. STREAM-SNF Inventory Validation

## IV. STREAM-SNF Decay Heat Validation

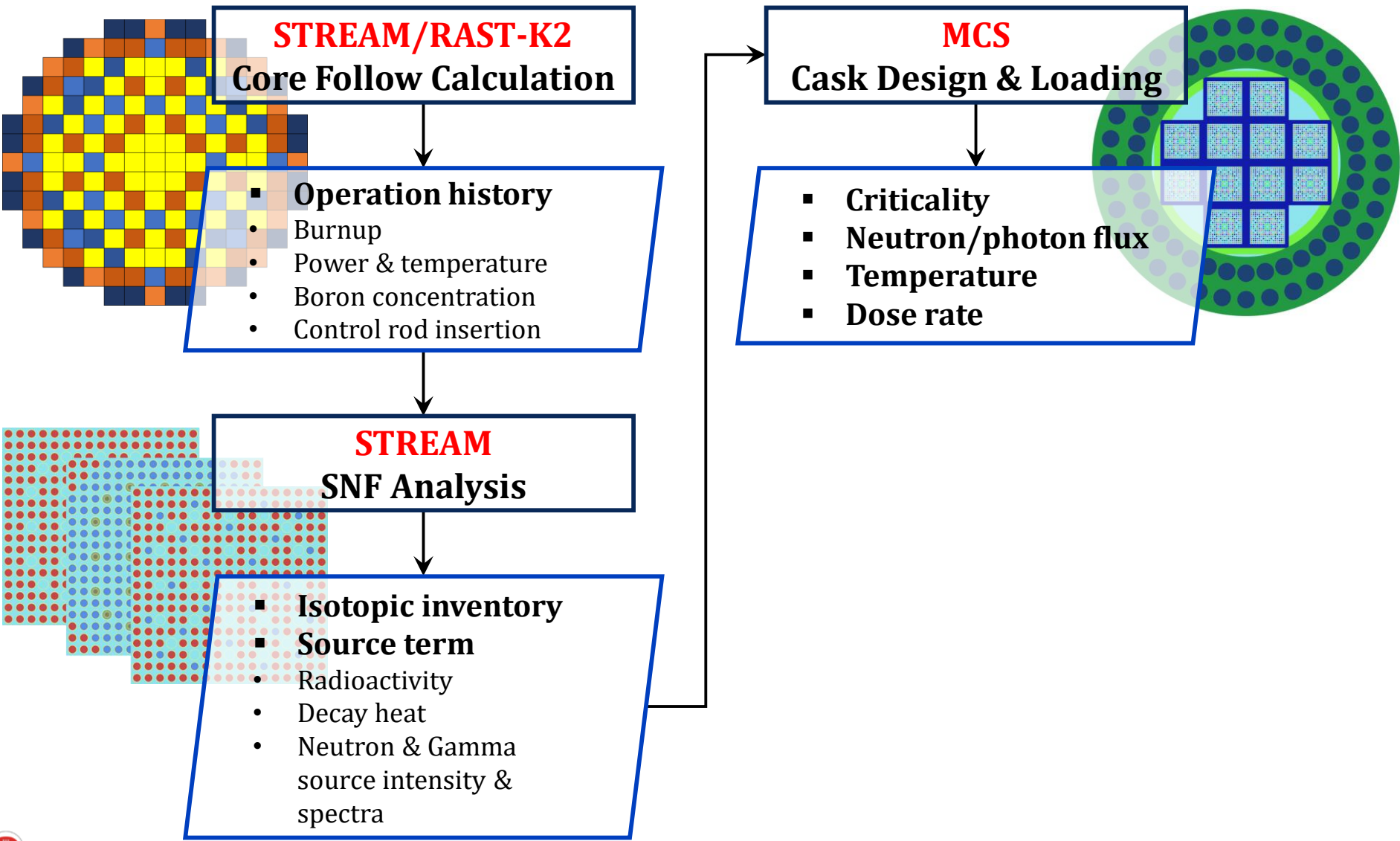
## ▪ **STREAM-SNF**

- A radiation source term capability has been implemented in **STREAM** to perform **SNF** characterization, cask dose rate analysis, for waste management, radiological safety and burnup credit applications

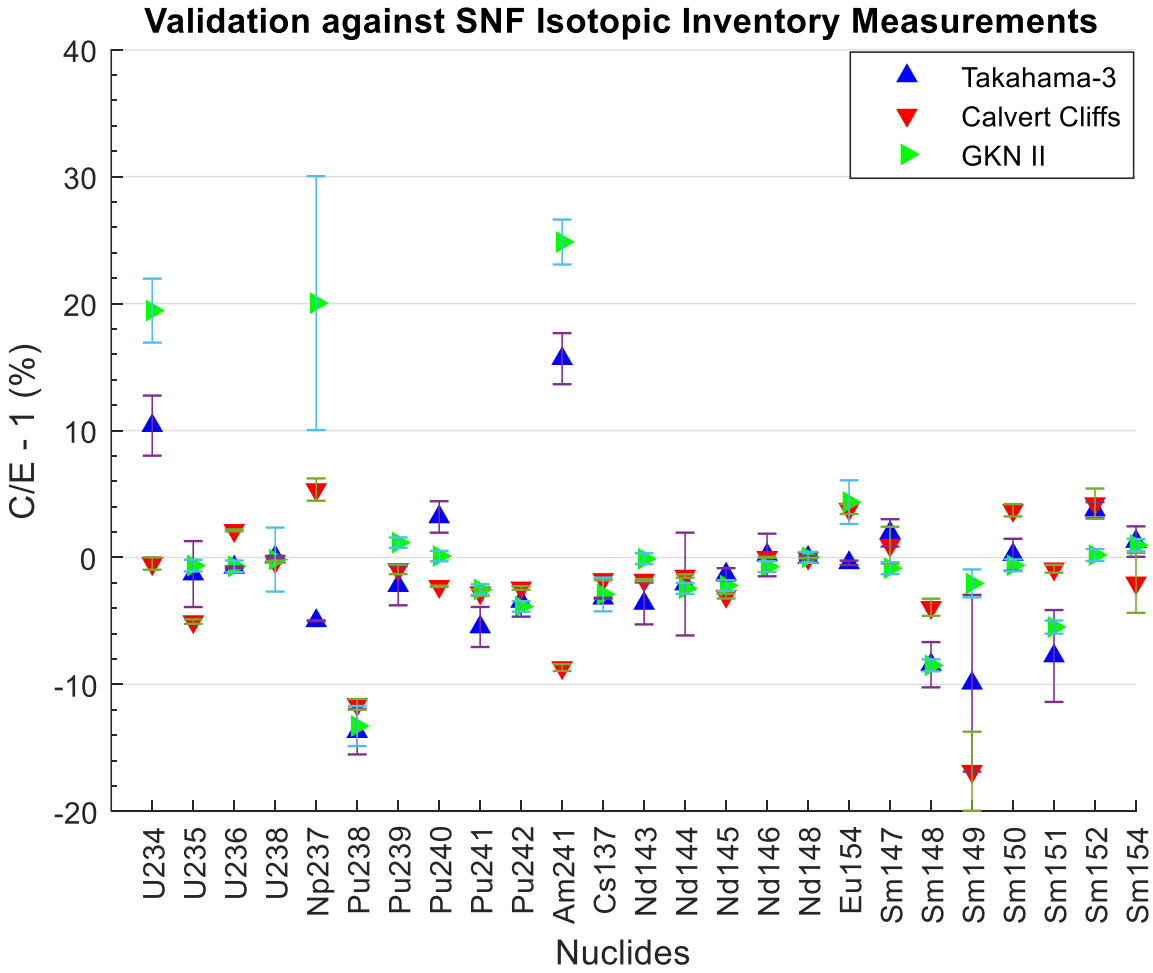
## ▪ **Features**

- Pin wise/assembly wise **SNF** isotopic inventory
- Radioactivity
- Decay heat
- Gamma source spectra
- Neutron source spectra

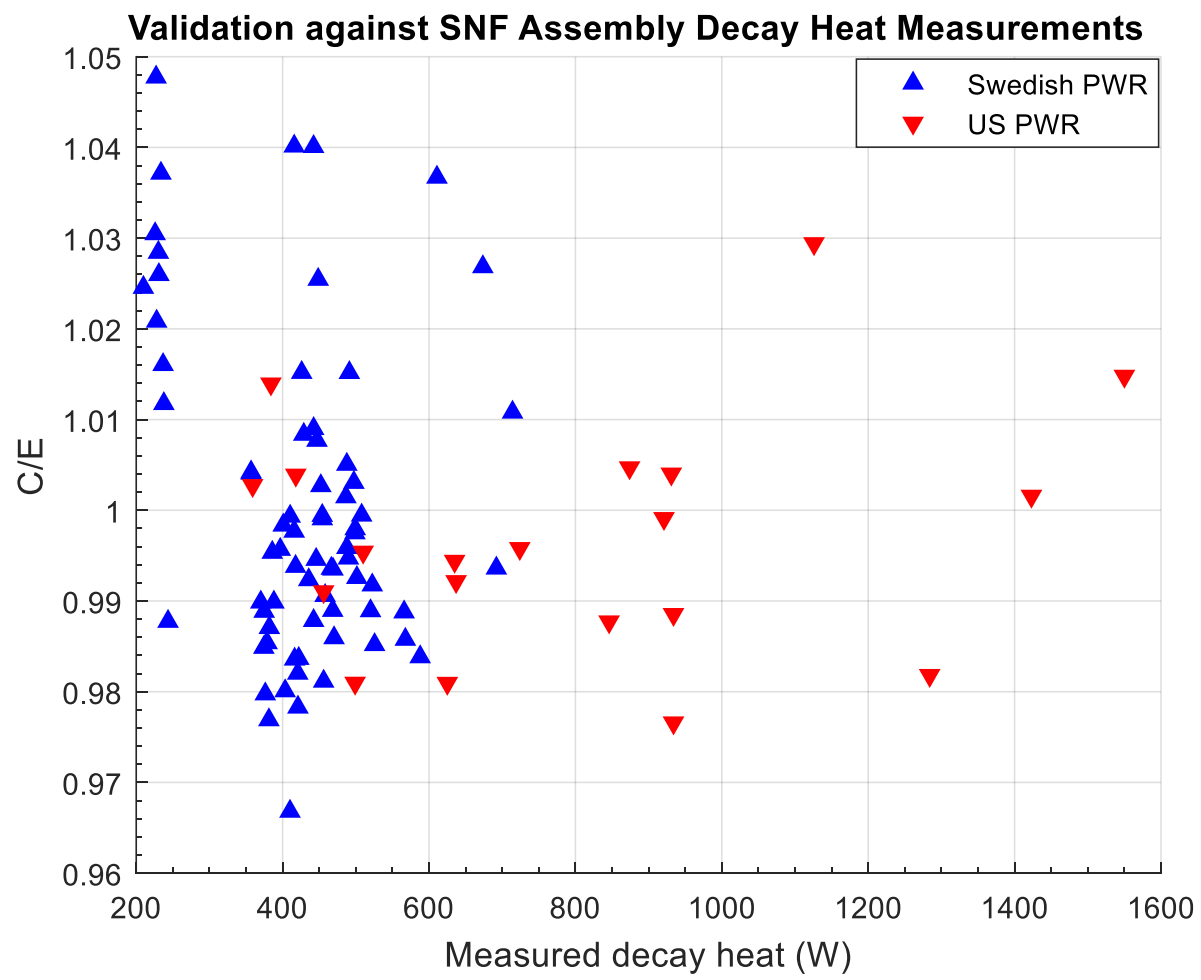
# UNIST-SNF Calculation Procedure



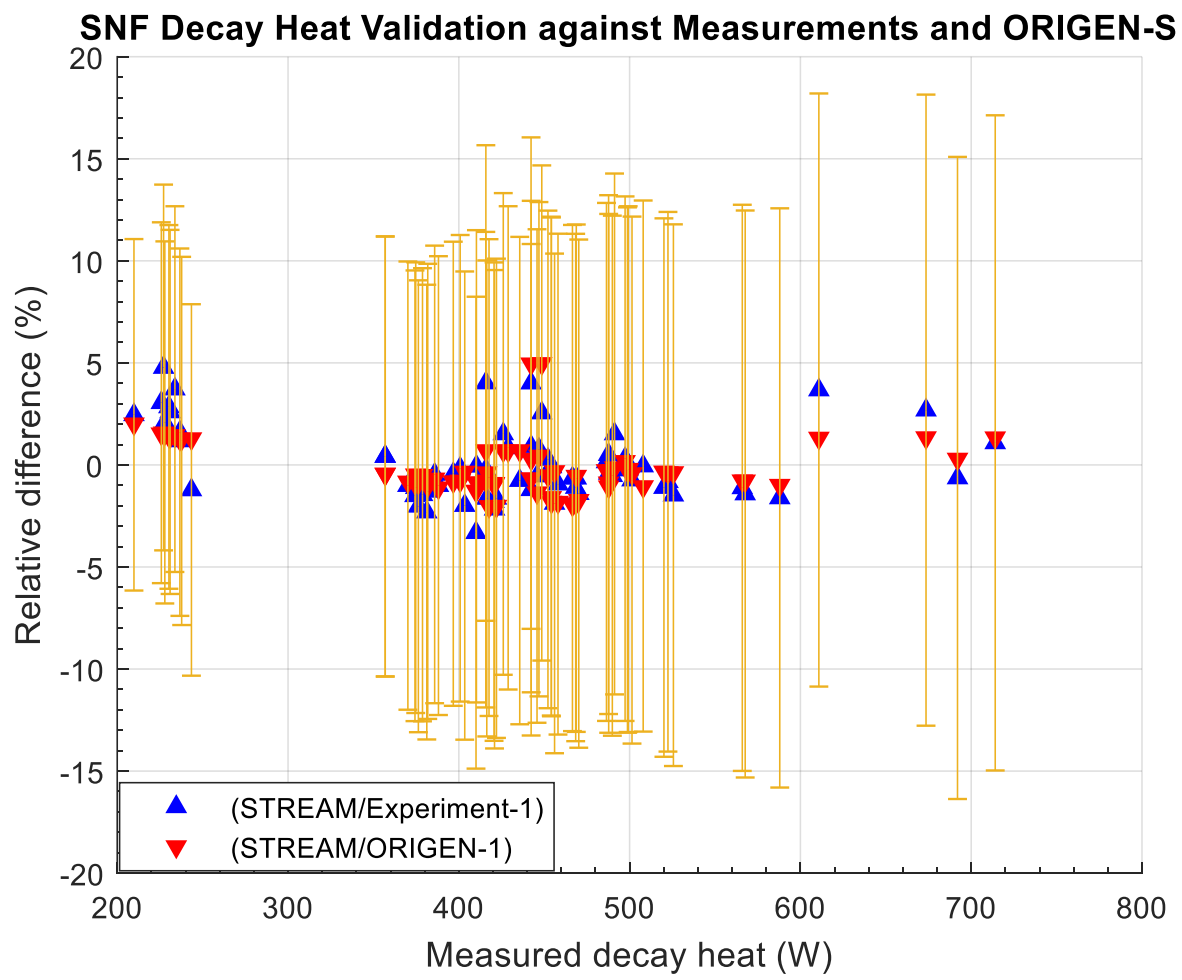
# STREAM-SNF Isotopic Inventory Validation



# STREAM-SNF Assembly Decay Heat Validation



# STREAM-SNF Assembly Decay Heat Validation



# STREAM-SNF Assembly Decay Heat Validation

## Swedish PWR decay heat measurements

Assembly design	No. of measurements	<u>C/E</u>		<u>(C - E) W</u>					
		STREAM		ORIGEN-S		STREAM		ORIGEN-S	
		Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev
15 x 15	33	0.996	0.016	0.998	0.012	-1.73	6.84	-0.96	5.11
17 x 17	38	1.005	0.017	1.005	0.011	0.87	6.96	1.89	4.36
Overall	71	1.000	0.017	1.002	0.012	-0.34	7.03	0.57	4.91

## US PWR decay heat measurements

	<u>STREAM</u>		<u>ORIGEN2.2</u>		<u>CASM05</u>	
	Mean	STD	Mean	STD	Mean	STD
C/E	0.997	0.013	1.000	0.023	1.008	0.021
C - E (W)	-1.63	12.62	5.20	26.74	5.83	17.50
n	20		20		20	



**UNIST CORE**