RAVEN
Driver
← Input file

RAVEN
Input Processing

Input file →

RELAP-7
MOOSE

- RELAP-7 component creation
- RELAP-7 calculation set-up
- Initial condition assigned for $\bar{x}$

Parsing for
- Controlled Variables $\bar{v}$
- Monitored Variables $\bar{C}$ => restriction laws $\bar{C} = \bar{G}(\bar{x}, t)$
- Auxiliary Variables $\bar{a}$

RAVEN
RELAP-7 Interface

- $\bar{v}$ location
- $\bar{C}$ location

RELAP-7
MOOSE

- Initialization of the restriction laws $\bar{C} = \bar{G}(\bar{x}, t)$
- Initial condition for $\bar{C}$

RAVEN
Driver

- Controlled Variable $\bar{v}$ handlers
- Monitored Variable $\bar{C}$ handlers
- Auxiliary Variable $\bar{a}$ handlers

RAVEN
*Control Logic
Python-C++
Interface*

User provided
control logic
implementation

- $\bar{a}$ gets initialized
- $\bar{v}$ gets initialized

RAVEN
RELAP-7 Interface

$\bar{v}$ initial value →

RELAP-7
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Continue in Figure 3

Continue from Figure 2

RAVEN *Driver*

- Time step start signal
- Time step end signal
- New $\bar{C}$ values

RELAP-7 MOOSE

RAVEN *Control Logic Python-C++ Interface*

- $\bar{a}$ old values
- $\bar{v}$ old values
- $\bar{C}$ new values

- $\bar{a}$ new values
- $\bar{v}$ new values
- $\bar{C}$ new values

User provided control logic implementation

RAVEN *RELAP-7 Interface*

$\bar{v}$ new values

RELAP-7 MOOSE

RAVEN *Driver*

- Time marching forward: $t = t + \Delta t$
- $\bar{v}_{t_{i-1}} \leftarrow \bar{v}_{t_i}$
- $\bar{a}_{t_{i-1}} \leftarrow \bar{a}_{t_i}$

One time step has been performed

Figure 1 Calculation Flow