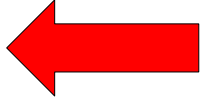


# Status and Plan of BSM Software & Data Integration

Wooyoung Jang

Department of Physics,  
University of Texas at  
Arlington

# A Vision of SW & Data Integration

- An integrated simulation environment 
- Common storage space
- Data management
- Version control of simulation data or software
- Documentation

# BSM SW Integration Preparation

## BSM SOFTWARE INTEGRATION PREPARATION

PHYSICS TOPIC	LIAISON	NAME OF SOFTWARE	SW VERSION	AVAILABILITY IN dune_gpvm
LDM	Wooyoung Jang	Geant4	4.10.6	yes
		GENIE	3.0.6	yes
LED/Sterile (GLOBES setup)	David Vanegas Forero	gsl	2.5	yes
		GLOBES (C-library)	3.2.18	no
Nutau steriles	Alex Sousa (also Miriama Rajaoalisoa)	edepsim	3.1.0	yes (but not as an UPS package)
		GiBUU	2019	yes (but not as an UPS package)
HNL	Athans Hatzikoutelis	Geant4	4.10.6	yes
		GENIE	3.0.6	yes
		gsl	2.5	yes
NSI / NU / CPT	Celio Moura	GLOBES	3.2.18	no

Since GLOBES is not available in dune\_gpvm right now, we may have to include the installation process of GLOBES in `<setup_dune_bsm>`.

# Integrated Software Environment

- A shell script-based integrated environment
  - Aiming to work on the `dunegpvmXX.fnal.gov` machines.
  - We can imagine a similar usage as if we do everytime in dunegpvm machines:  

```
$ source /cvmfs/dune.opensciencegrid.org/products/dune/setup_dune.sh
```
  - This helps to setting up of basic environment of DUNE-related softwares.
  - The integrated software environment of BSM group will do the similar thing:  

```
$ setup_dune_bsm
```
- Each topical groups will provide some example scripts that producing practical simulation result and analysis output, and those scripts will be included in the integrated software environment.

# A Github Repository for the Project

- [https://github.com/wyjang-uta/setup\\_dune\\_bsm](https://github.com/wyjang-uta/setup_dune_bsm)

The screenshot shows the GitHub repository page for 'wyjang-uta/setup\_dune\_bsm'. The repository is on the 'main' branch and has 1 branch and 0 tags. The commit history shows a recent commit by 'WOORYOUNG JANG' with the message 'subroutine frames are added.' and 3 commits. The file list includes README.md, hnl.sh, ldm.sh, nsi.sh, nutau.sh, setup\_dune\_bsm, sterile.sh, and trident.sh, all with the message 'subroutine frames are added.' and a timestamp of '22 seconds ago'. The README.md file is expanded, showing the project description: 'This project includes [setup\_dune\_bsm] - a software environment integration script - for DUNE BSM physics researches.' and a list of authors: Wooyoung Jang, Celio A. Moura, Athanasios Hatzikoutelis, Justo Martin-Albo, Alexandre Sousa, David V. Forero, Michael Wallbank, Yu, and Jaehoon.

**About**  
DUNE BSM simulation software integration script.

**Releases**  
No releases published  
[Create a new release](#)

**Packages**  
No packages published  
[Publish your first package](#)

**Languages**  
Shell 100.0%

# Cloning the Github Repository

Search or jump to... Pull requests Issues Marketplace Explore

wyjang-uta / setup\_dune\_bsm Unwatch 1 Star 0 Fork 0

<> Code Issues Pull requests Actions Projects Wiki Security Insights Settings

main 1 branch 0 tags Go to file Add file Code

WOORYOUNG JANG subroutine frames are added. af50241 22 seconds ago 3 commits

README.md	first commit	3 days ago
hnl.sh	subroutine frames are added.	22 seconds ago
ldm.sh	subroutine frames are added.	22 seconds ago
nsi.sh	subroutine frames are added.	22 seconds ago
nutau.sh	subroutine frames are added.	22 seconds ago
setup_dune_bsm	subroutine frames are added.	22 seconds ago
sterile.sh	subroutine frames are added.	22 seconds ago
trident.sh	subroutine frames are added.	22 seconds ago

**README.md**

This project includes [setup\_dune\_bsm] - a software environment integration script - for DUNE BSM physics researches.

List of Authors:

Wooyoung Jang [wooyoung.jang@uta.edu](mailto:wooyoung.jang@uta.edu), Celio A. Moura [celio.moura@ufabc.edu.br](mailto:celio.moura@ufabc.edu.br), Athanasios Hatzikoutelis [athanasios.hatzikoutelis@sjsu.edu](mailto:athanasios.hatzikoutelis@sjsu.edu), Justo Martin-Albo [jmalbos@gmail.com](mailto:jmalbos@gmail.com), Alexandre Sousa (sousaae) [absousa@gmail.com](mailto:absousa@gmail.com), David V. Forero, [dvanegas@udem.edu.co](mailto:dvanegas@udem.edu.co), Michael Wallbank [wallbank@fnal.gov](mailto:wallbank@fnal.gov), Yu, Jaehoon [jaehoon@uta.edu](mailto:jaehoon@uta.edu)

**About** DUNE BSM simulation software integration script.

**Releases** No releases published. [Create a new release](#)

**Packages** No packages published. [Publish your first package](#)

**Languages** Shell 100.0%

# Cloning the Github Repository

The screenshot shows the GitHub repository page for 'wyjang-uta/setup\_dune\_bsm'. The repository is on the 'main' branch and contains several files: README.md, hnl.sh, ldm.sh, nsi.sh, nutau.sh, setup\_dune\_bsm, sterile.sh, and trident.sh. A 'Clone' dropdown menu is open, showing options for cloning via SSH, GitHub CLI, or HTTPS. The HTTPS URL is highlighted with a red box, and a copy icon is also highlighted with a red box. The 'Download ZIP' option is also visible. The repository description is 'DUNE BSM simulation software integration script'. The 'About' section includes a 'Readme' link. The 'Releases' section shows 'No releases published' and a link to 'Create a new release'. The 'Packages' section shows 'No packages published' and a link to 'Publish your first package'. The 'Languages' section shows 'Shell 100.0%'.

wyjang-uta / setup\_dune\_bsm

main 1 branch 0 tags

Go to file Add file Code

WOORYOUNG JANG subroutine frames are added.

README.md	first commit
hnl.sh	subroutine frames are added.
ldm.sh	subroutine frames are added.
nsi.sh	subroutine frames are added.
nutau.sh	subroutine frames are added. 7 minutes ago
setup_dune_bsm	subroutine frames are added. 7 minutes ago
sterile.sh	subroutine frames are added. 7 minutes ago
trident.sh	subroutine frames are added. 7 minutes ago

Clone

HTTPS SSH GitHub CLI

https://github.com/wyjang-uta/setup\_dune\_bsm

Download ZIP

README.md

This project includes [setup\_dune\_bsm] - a software environment integration script - for DUNE BSM physics researches.

List of Authors:

Wooyoung Jang [wooyoung.jang@uta.edu](mailto:wooyoung.jang@uta.edu), Celio A. Moura [celio.moura@ufabc.edu.br](mailto:celio.moura@ufabc.edu.br), Athanasios Hatzikoutelis [athanasios.hatzikoutelis@sjsu.edu](mailto:athanasios.hatzikoutelis@sjsu.edu), Justo Martin-Albo [jmalbos@gmail.com](mailto:jmalbos@gmail.com), Alexandre Sousa ([sousaae@uta.edu](mailto:sousaae@uta.edu)) [absousa@gmail.com](mailto:absousa@gmail.com), David V. Forero, [dvanegas@udem.edu.co](mailto:dvanegas@udem.edu.co), Michael Wallbank [wallbank@fnal.gov](mailto:wallbank@fnal.gov), Yu, Jaehoon [jaehoon@uta.edu](mailto:jaehoon@uta.edu)

About

DUNE BSM simulation software integration script.

Readme

Releases

No releases published

Create a new release

Packages

No packages published


Publish your first package

Languages

Shell 100.0%

# Cloning the Github Repository

Type 'git clone' and paste.

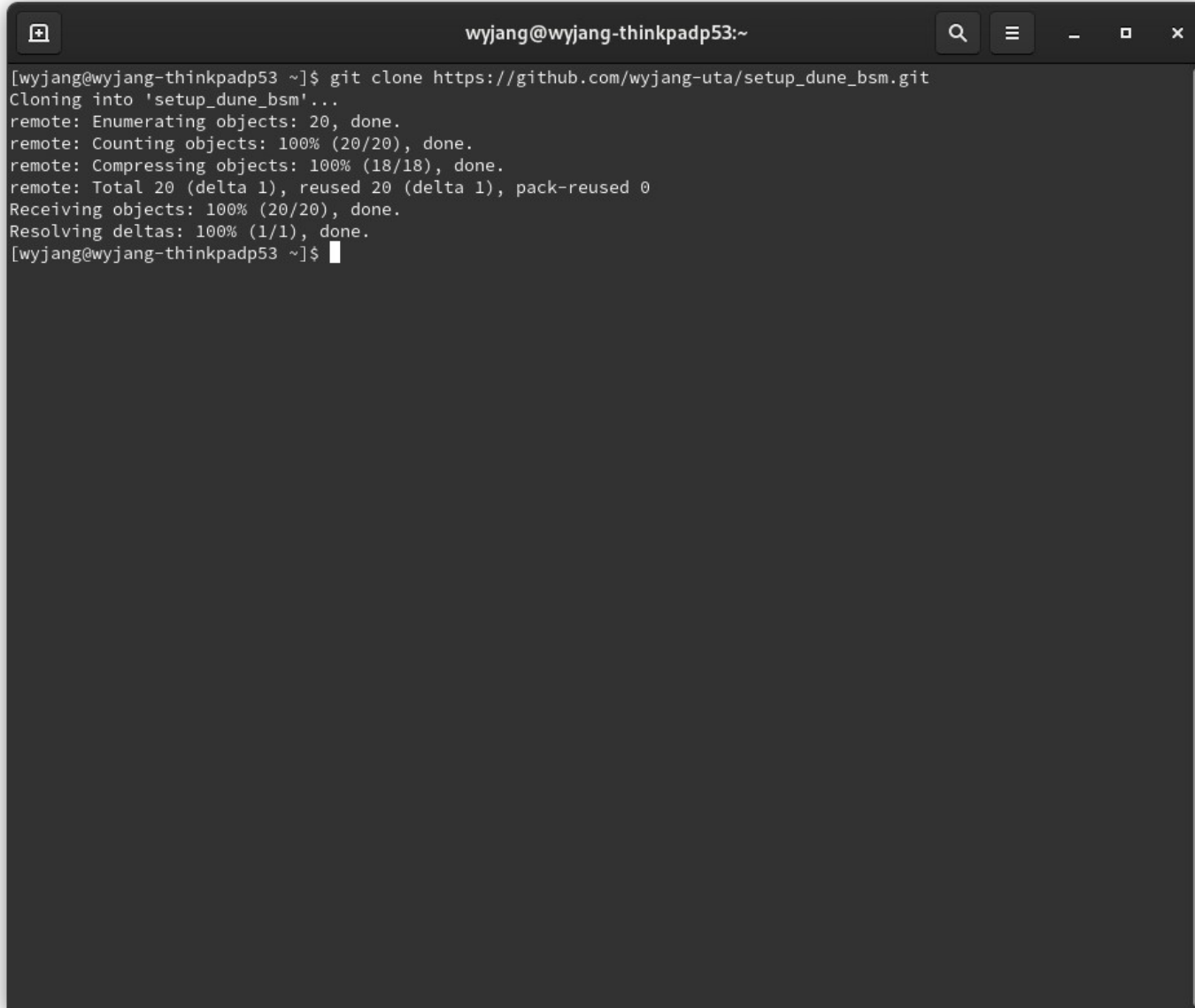
A terminal window with a dark background and light text. The window title is "wyjang@wyjang-thinkpadp53:~". The prompt is "[wyjang@wyjang-thinkpadp53 ~]\$". The command "git clone https://github.com/wyjang-uta/setup\_dune\_bsm.git" is entered and highlighted in white. The terminal is otherwise empty.

```
wyjang@wyjang-thinkpadp53:~  
[wyjang@wyjang-thinkpadp53 ~]$ git clone https://github.com/wyjang-uta/setup_dune_bsm.git
```



# Cloning the Github Repository

Cloning is finished.

A terminal window titled 'wyjang@wyjang-thinkpadp53:~' showing the output of a git clone command. The output indicates that the repository was successfully cloned into a directory named 'setup\_dune\_bsm'. The process involved enumerating 20 objects, counting them, compressing them, and receiving them, all with 100% completion. The total size of the repository is 20 objects, with 18/18 compressed and 1/1 resolved.

```
wyjang@wyjang-thinkpadp53:~$ git clone https://github.com/wyjang-uta/setup_dune_bsm.git
Cloning into 'setup_dune_bsm'...
remote: Enumerating objects: 20, done.
remote: Counting objects: 100% (20/20), done.
remote: Compressing objects: 100% (18/18), done.
remote: Total 20 (delta 1), reused 20 (delta 1), pack-reused 0
Receiving objects: 100% (20/20), done.
Resolving deltas: 100% (1/1), done.
wyjang@wyjang-thinkpadp53:~$
```

# Cloning the Github Repository

```
wyjang@wyjang-thinkpadp53:~/setup_dune_bsm
[wyjang@wyjang-thinkpadp53 ~]$ git clone https://github.com/wyjang-uta/setup_dune_bsm.git
Cloning into 'setup_dune_bsm'...
remote: Enumerating objects: 20, done.
remote: Counting objects: 100% (20/20), done.
remote: Compressing objects: 100% (18/18), done.
remote: Total 20 (delta 1), reused 20 (delta 1), pack-reused 0
Receiving objects: 100% (20/20), done.
Resolving deltas: 100% (1/1), done.
[wyjang@wyjang-thinkpadp53 ~]$ cd setup_dune_bsm
[wyjang@wyjang-thinkpadp53 setup_dune_bsm]$ ls
examples hnl.sh ldm.sh nsi.sh nutau.sh README.md setup_dune_bsm sterile.sh trident.sh
[wyjang@wyjang-thinkpadp53 setup_dune_bsm]$
```

# Function Structure of the Script

- <setup\_dune\_bsm> v0.1 takes an argument from user and run corresponding subroutine.

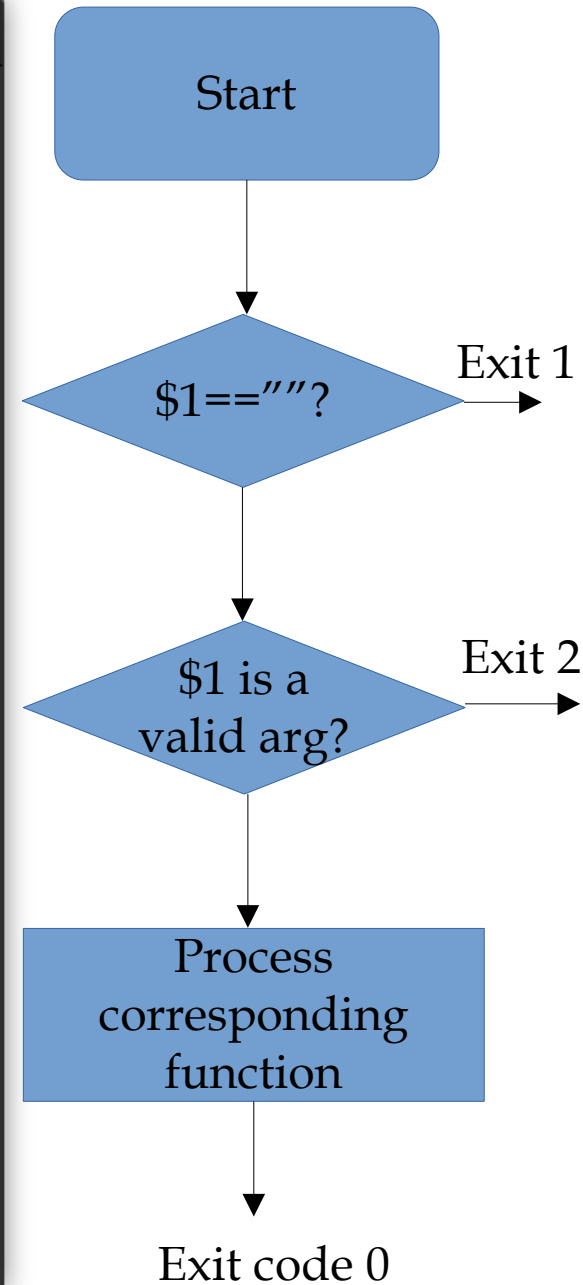
```
[wyjang@wyjang-thinkpadp53 setup_dune_bsm]$ ls
examples hnl.sh ldm.sh nsi.sh nutau.sh README.md setup_dune_bsm sterile.sh trident.sh
[wyjang@wyjang-thinkpadp53 setup_dune_bsm]$ ./setup_dune_bsm ldm
setup_dune_bsm v0.1 template.odp
Enabling LDM environment...
[wyjang@wyjang-thinkpadp53 setup_dune_bsm]$
```

## setup\_dune\_bsm

— hnl.sh	-	when an argument <code>hnl</code> is used.
— nsi.sh	-	when an argument <code>nsi</code> is used.
— nutau.sh	-	when an argument <code>nutau</code> is used.
— ldm.sh	-	when an argument <code>ldm</code> is used.
— sterile.sh	-	when an argument <code>sterile.sh</code> is used.
— trident.sh	-	when an argument <code>trident.sh</code> is used.

```
wyjang@wyjang-thinkpadp53:~/setup_dune_bsm — /usr/bin/vim setup_dune_bsm
setup_dune_bsm buffers
1 #!/bin/bash
2
3 echo "setup_dune_bsm v0.1"
4
5 source $(dirname "$0")/ldm.sh
6 source $(dirname "$0")/sterile.sh
7 source $(dirname "$0")/trident.sh
8 source $(dirname "$0")/hnl.sh
9 source $(dirname "$0")/nsi.sh
10 source $(dirname "$0")/nutau.sh
11
12 if [ "$1" == "" ]
13 then
14     echo "[ERROR] Specify which environment you want to configure"
15     exit 1
16 fi
17
18 if [ "$1" == "ldm" ]
19 then
20     ldm
21 elif [ "$1" == "sterile" ]
22 then
23     sterile
24 elif [ "$1" == "trident" ]
25 then
26     trident
27 elif [ "$1" == "hnl" ]
28 then
29     hnl
30 elif [ "$1" == "nsi" ]
31 then
32     nsi
33 elif [ "$1" == "nutau" ]
34 then
35     nutau
36 else
37     echo "[ERROR] Can't find $1 in the valid argument list"
38     exit 2
39 fi
40
41 exit 0
```

function declaration



# BSM SW Integration Preparation

## BSM SOFTWARE INTEGRATION PREPARATION

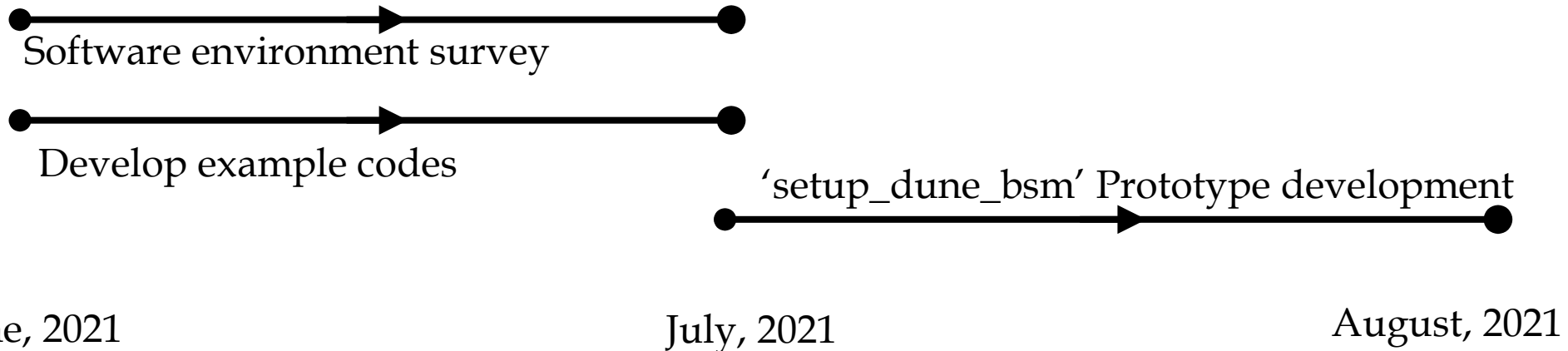
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		GENIE	3.0.6	yes
		gsl	2.5	yes
NSI / NU / CPT	Celio Moura	GLOBES	3.2.18	no

I can write a script for Geant4, GENIE and gsl.

I need your help for GLOBES, edep-sim and GiBUU.

# To do list & Milestones

- Development
  - A shell script for easy access to the simulation software on dunegpvm machines.
  - Basic example scripts
    - Check the <setup\_dune\_bsm> working correctly
    - Help new-faces to the group



# Summary

- A github project repository is provided.
  - [https://github.com/wyjang-uta/setup\\_dune\\_bsm](https://github.com/wyjang-uta/setup_dune_bsm)
- Liaisons are expected to write and review the scripts for the functions of their topics.
- Once the setup script job is finished, we need example scripts for each topical studies. We may be able to check whether the <setup\_dune\_bsm> script works good or not by running this examples and also it provides easier way of understanding of the simulation process to possible newcomers.