



Computer Algebra Software on ACCESS

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Motivation

Computer algebra software has become an indispensable tool

Need for more powerful resources; RAM

Streamline the procedure



Main Platforms

Large Memory Nodes

- Indiana Jetstream2 Large Memory | 1TB
- Kentucky Research Informatics Cloud (KyRIC) Large Memory Nodes | 3TB
- PSC Bridges-2 Extreme Memory (Bridges-2) | 4TB
- Purdue Anvil CPU | 1TB
- SDSC Expanse CPU | 2TB




What's in tutorial

How to install and run SageMath and Macaulay2

Current status

- Command line installation on Jetstream2
- Singularity container on Expanse



```
(base) exouser@supposedly-arriving-malamute:~$ mamba activate sage
(sage) exouser@supposedly-arriving-malamute:~$ sage
```


```
SageMath version 10.0, Release Date: 2023-05-20
Using Python 3.11.6. Type "help()" for help.
```

```
sage: █
```

```
Macaulay2, version 1.19.1
with packages: ConwayPolynomials, Elimination, Integer
               TangentCone
```

```
i1 : █
```

Sage & M2 on Jetstream2



```
[youngsukim@exp-1-41 container_images]$ singularity shell sagemath_offi
Singularity> ls
sagemath.tar  sagemath_official  ubuntu  ubuntu22.tar
Singularity> sage

SageMath version 10.1, Release Date: 2023-08-20
Using Python 3.11.1. Type "help()" for help.

sage: █
```

Sage on Expanse



To-dos

- Examples
- JupyterLab, resource monitoring
- Other HPC centers
- Multicore-compute nodes
- Tester

Mentor Bob Sinkovits, https://github.com/youngsu-Kim/access_cas_tutorial