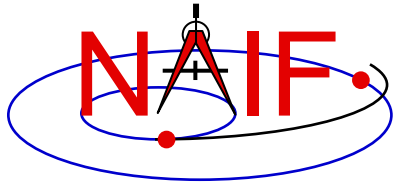


Navigation and Ancillary Information Facility

# **Welcome to the SPICE Tutorials**

**January 2020**

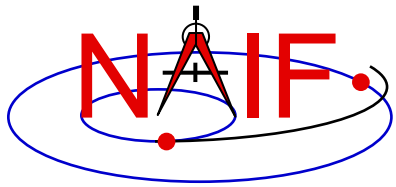


# Objectives

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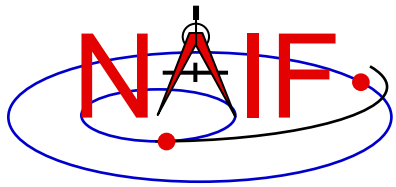
- Provide an **overview** of the entire SPICE system
- Provide a sense of the purpose and **uses** of SPICE
- Provide an introduction to the primary SPICE **components**
- Provide **examples** of how to use SPICE software and data files
- Provide some insight into **conventions** and **common problems**
- Provide a substantive **programming example**
- Provide a **peek at new capabilities** being worked on or considered
- Familiarize you with available **SPICE resources**
  
- **Going through these extensive tutorials and the associated programming lessons will not be enough to make you well versed in SPICE – it's just a significant start towards that goal.**



# Tutorials Scope

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- **Broad coverage**
  - Begins at a high level, but quickly drills down to details
  - Touches on many SPICE-related topics that could be of interest to science and engineering teams
    - » Depth of discussion varies somewhat amongst topics
- **Provide information for FORTRAN, C, IDL and MATLAB programmers**
  - Does not cover Java Native Interface (JNI Spice), or the Python (e.g. SpiceyPy), Ruby, Swift and Julia 3rd party offerings.
- **Some tutorials have important material provided in a “Backup” section: you should read those charts too!**
- **Some topics are addressed rather little or not at all**
  - Kernel production
  - Archiving SPICE data

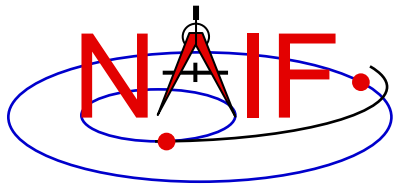


# Repeated Material

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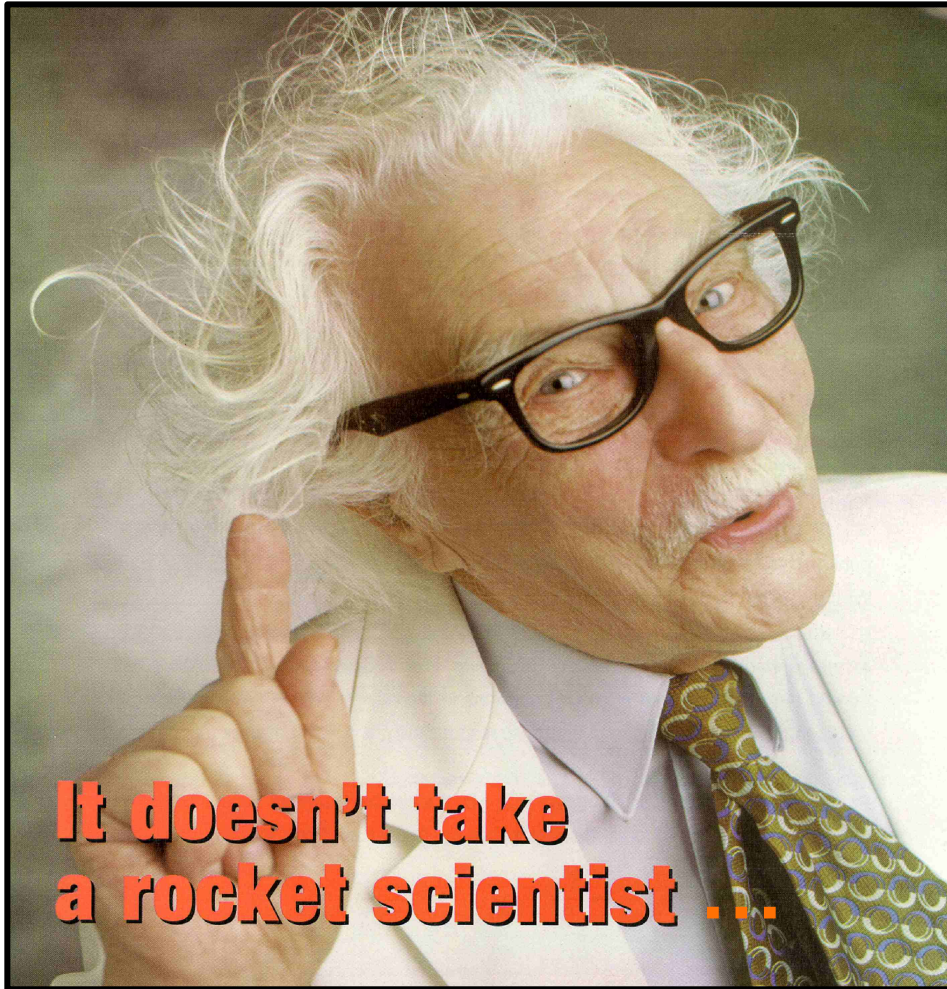
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- **Some topics will be repeated in two or more tutorials**
  - **We're not trying to bore you, but...**
    - » **we don't wish to assume people will read all of the tutorials at the same time**
    - » **we think some items are sufficiently important to mention them more than once**



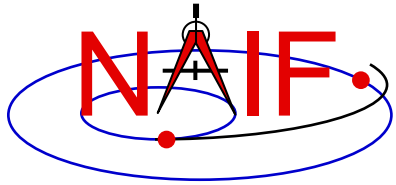
# Your SPICE Odyssey Begins Here

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... but it does take a modest amount of effort to learn enough about SPICE to begin to use its features with good success.

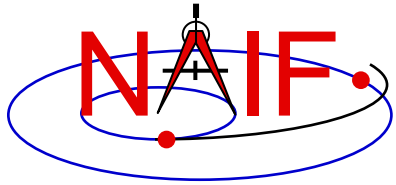
It helps to have some math skills, some innate sense of spatial orientation, and some familiarity with your computer's operating system, a code editor, and a compiler or Integrated Development Environment (IDE).



# SPICE Seems “Large”

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- **The generic SPICE Toolkit contains:**
  - several hundred public APIs (“modules” or “subroutines”)
  - about 17 utility and application executables
  - about 26 subsystem technical reference documents
  - and more
- **Don’t let this size bother you... just work your way into it bit by bit**
- **Most customers use only a handful of these APIs**
- **Hundreds of others just like you are using SPICE today**



# The NAIF Team at JPL

Navigation and Ancillary Information Facility



**Chuck Acton**



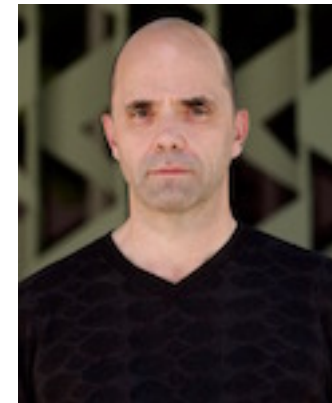
**Nat Bachman**



**Fraser Thomson**



**Boris Semenov**



**Ed Wright**