

# LibHSL

The largest collection of HSL packages in one bundle

Version: 2023.11.7

LibHSL is the ultimate sparse linear algebra collection for large-scale scientific computing. It contains more than 160 HSL packages and aims to facilitate the use of HSL in [Julia](#), Fortran, and C.

With libHSL we focus on ease of use for users on all platforms by using a Meson build system. Meson enables the distribution of prebuilt binaries for the package using BinaryBuilder.jl. Additionally, libHSL supports either METIS 5 or the older METIS 4.

This new package provides the source code of the included HSL packages, prebuilt binaries for use with Windows and Mac, and a Julia package named HSL\_jll.jl. HSL\_jll.jl is a pre-built version of libHSL to be readily used in the Julia ecosystem. Once HSL\_jll.jl is installed, the HSL wrappers provided in the Julia interface HSL.jl are functional. HSL\_jll.jl also provides an easy way to use the HSL linear solvers MA27, MA57, MA77, MA86 and MA97 within the IPOPT.jl interface to the IPOPT nonlinear optimization solver.

Two versions of HSL\_jll.jl are available. One precompiled with OpenBLAS that requires at least Julia 1.6 and the other version precompiled with libblastrampoline (LBT) that requires at least Julia 1.9. LBT allows one to dynamically switch the BLAS and LAPACK backends between e.g. OpenBLAS, BLIS, Intel MKL or Apple Accelerate. HSL\_jll.jl is precompiled for various operating systems (Windows, Mac, Linux, FreeBSD) and architectures (x64, arm64, ppc64).

For information on how to use each function available through this package directly please see the relevant documentation on [the HSL website](#).

*"One package to rule them all" -- Alexis Montoisson*

<https://licences.stfc.ac.uk/product/libhsl>