<https://www.overleaf.com/project/616e8be7e2e10ee92cd8a96b>

# Boost MPL

<https://www.boost.org/doc/libs/1_77_0/libs/mpl/doc/index.html>

<https://www.boost.org/doc/libs/1_77_0/libs/mpl/doc/refmanual.pdf>

“The Boost.MPL library is a general-purpose, high-level C++ template metaprogramming framework of compile-time algorithms, sequences and metafunctions. It provides a conceptual foundation and an extensive set of powerful and coherent tools that make doing explicit metaprogramming in C++ as easy and enjoyable as possible within the current language.”

# Boost Hana

<https://www.boost.org/doc/libs/1_77_0/libs/hana/doc/html/index.html>

“Hana is a header-only library for C++ metaprogramming suited for computations on both types and values. The functionality it provides is a superset of what is provided by the well established Boost.MPL and Boost.Fusion libraries. By leveraging C++11/14 implementation techniques and idioms, Hana boasts faster compilation times and runtime performance on par or better than previous metaprogramming libraries, while noticeably increasing the level of expressiveness in the process. Hana is easy to extend in an ad-hoc manner and it provides out-of-the-box inter-operation with Boost.Fusion, Boost.MPL and the standard library.”

More modern than MPL, uses C++11 and C++14 features

# Links

**Comparative TMP #1: MPL, Mp11, Kvasir, Hana, Metal:** <https://quuxplusone.github.io/blog/2019/12/28/metaprogramming-n-ways/>

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|  | Boost.MPL | Boost.Hana |
| Release | ~2003  <https://www.boost.org/doc/libs/1_77_0/libs/mpl/doc/index.html> |  |
| C++ standard used | C++03 | C++14  <https://www.boost.org/doc/libs/1_77_0/libs/hana/doc/html/index.html#tutorial-installation-requirements> |
| Compiler version (GCC, Clang) | GCC 3.2.2  Clang (not listed)  <https://www.boost.org/doc/libs/1_77_0/libs/mpl/doc/tutorial/portability.html> | GCC >= 8  Clang >= 7  <https://www.boost.org/doc/libs/1_77_0/libs/hana/doc/html/index.html#tutorial-installation-requirements> |
| Github | <https://github.com/boostorg/mpl> | <https://github.com/boostorg/hana> |
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