

# Comparison of the ndarray repository

## Summary of Repositories

Comparison run at 07:32PM on June 07, 2015

There are **17** differences between the two repositories

Repository **/Users/nate/repos\_hsc/ndarray/**

Revision **1e102dd4f775e3c6afcdc5930096552123c3689d**

Branch **master**

Last commit was on **2013-12-06 16:06:11 -0500**

Repository **/Users/nate/repos\_lsst/ndarray/**

Revision **7408a83a3aa3df1509bb22d61aa4438c65cef2b6**

Branch **master**

Last commit was on **2015-01-22 12:09:07 -0500**

---

**Files only in /Users/nate/repos\_hsc/ndarray/**

**Files only in /Users/nate/repos\_lsst/ndarray/**

## List of the files in common

Files without links do not differ

- `include/ndarray/detail/Core.h`
- `doc/doxygen.conf.in`

- `include/ndarray/swig/eigen.h`
- `ups/ndarray.build`
- `doc/SConscript`
- `include/ndarray/fft/FFTWTraits.h.m4`
- `include/ndarray/ExpressionTraits.h`
- `include/ndarray/ArrayBaseN.h.m4`
- `SConstruct`
- `include/ndarray/detail/BinaryOp.h`
- `include/ndarray/casts.h`
- `include/ndarray/fft/FourierOps.h`
- [`include/ndarray/Array.h`](#)
- `include/ndarray.h`
- `tests/swig_test_mod.i`
- `include/ndarray/arange.h`
- `include/ndarray/detail/StridedIterator.h`
- `include/ndarray/formatting.h`
- `include/ndarray/vectorize.h`
- `.gitignore`
- `include/ndarray/swig/ufuncutors.h`
- `include/ndarray/tables_fwd.h`
- `include/ndarray/swig.h`
- `include/ndarray/fft/FourierTransform.h`
- `include/ndarray/ArrayRef.h.m4`
- `include/ndarray/views.h`
- `include/ndarray/fft/FourierTransform.cc`
- `ups/ndarray.cfg`
- `include/ndarray/eigen_fwd.h`
- `include/ndarray/detail/ArrayAccess.h`
- `include/ndarray/swig/numpy.h`
- `include/ndarray/operators.h`
- `tests/SConscript`
- `include/ndarray_fwd.h`
- `include/ndarray/fft.h`
- `include/ndarray/detail/ViewBuilder.h`
- `include/ndarray/fft_fwd.h`
- `tests/ndarray-python-mod.cc`
- `include/ndarray/operators.h.m4`
- [`include/ndarray/initialization.h`](#)
- `tests/ndarray-python.py`

- `include/SConscript`
- `include/ndarray/fft/FourierTraits.h`
- `TODO`
- `tests/ndarray-eigen.cc`
- `include/ndarray/swig/Vector.h`
- `include/ndarray/swig/PyConverter.h`
- `python/ndarray.i`
- `include/ndarray/ArrayTraits.h`
- [include/ndarray/ArrayBase.h](#)
- [ups/ndarray.table](#)
- `include/ndarray/detail/UnaryOp.h`
- `include/ndarray/ExpressionBase.h`
- `include/ndarray/types.h`
- `include/ndarray/eigen.h`
- `include/ndarray/Manager.h`
- `tests/ndarray-fft.cc`
- `include/ndarray/detail/NestedIterator.h`
- `tests/ndarray.cc`
- `include/ndarray/Vector.h.m4`

## include/ndarray/Array.h

Diff:

```

// -*- c++ -*-
/*
 * LSST Data Management System
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 *
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 * LSST Project (http://www.lsst.org/).
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 * the Free Software Foundation, either version 3 of the License, or
 * (at your option) any later version.
 *
 * This program is distributed in the hope that it will be useful,

```

```

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* the GNU General Public License along with this program. If not,
* see .
*/
#ifndef NDARRAY_Array_h_INCLUDED
#define NDARRAY_Array_h_INCLUDED

/**
 * @file ndarray/Array.h
 *
 * @brief Definitions for Array.
 */

#include "ndarray_fwd.h"
#include "ndarray/ArrayTraits.h"
#include "ndarray/ArrayBaseN.h"
#include "ndarray/Vector.h"
#include "ndarray/detail/Core.h"
#include "ndarray/views.h"

namespace ndarray {

/**
 * @brief A multidimensional strided array.
 *
 * Array is the workhorse class of the ndarray library.
 */
template
class Array : public ArrayBaseN< Array > {
    typedef ArrayBaseN Super;
    typedef typename Super::Core Core;
    typedef typename Super::CorePtr CorePtr;
public:

    /**
     * @brief Default constructor.
     *
     * Creates an empty array with zero dimensions and null memory.
     */
    Array() : Super(0, Core::create()) {}

```

```

    /**
     * @brief Non-converting copy constructor.
     */
    Array(Array const & other) : Super(other._data, other._core) {}

    /**
     * @brief Converting copy constructor.
     *
     * Implicit conversion is allowed for non-const to const and for
     *
     * more guaranteed RMC to less guaranteed RMC (see \ref index).
     */
    template
    Array(
        Array const & other
#ifdef DOXYGEN
        , typename boost::enable_if,void*>::type=0
#endif
    ) : Super(other._data, other._core) {}

    /**
     * @brief Converting copy constructor.
     *
     * Implicit conversion is allowed for non-const to const and for
     *
     * more guaranteed RMC to less guaranteed RMC (see \ref index).
     */
    template
    Array(
        ArrayRef const & other
#ifdef DOXYGEN
        , typename boost::enable_if,void*>::type=0
#endif
    ) : Super(other._data, other._core) {}

    /**
     * @brief Non-converting shallow assignment.
     */
    Array & operator=(Array const & other) {
        if (&other != this) {
            this->_data = other._data;
            this->_core = other._core;
        }
        return *this;
    }

```

```

/**
 * @brief Converting shallow assignment.
 *
 * Implicit conversion is allowed for non-const -> const and for
 *
 * more guaranteed RMC -> less guaranteed RMC (see \ref index).
 */
template
#ifdef DOXYGEN
    typename boost::enable_if, Array &>::type
#else
    Array &
#endif
operator=(Array const & other) {
    this->_data = other._data;
    this->_core = other._core;
    return *this;
}

/**
 * @brief Converting shallow assignment.
 *
 * Implicit conversion is allowed for non-const -> const and for
 *
 * more guaranteed RMC -> less guaranteed RMC (see \ref index).
 */
template
#ifdef DOXYGEN
    typename boost::enable_if, Array &>::type
#else
    Array &
#endif
operator=(ArrayRef const & other) {
    this->_data = other._data;
    this->_core = other._core;
    return *this;
}

/**
 * @brief Shallow equality comparison: return true if the arrays
share data and
 *
 * have the same shape and strides.
 */
template

```

```

bool operator==(Array const & other) const {
    return this->getData() == other.getData()
        && this->getShape() == other.getShape()
        && this->getStrides() == other.getStrides();
}

/**
 * @brief Shallow inequality comparison.
 */
template
bool operator!=(Array const & other) const {
    return !this->operator==(other);
}

/// @brief Lightweight shallow swap.
void swap(Array & other) {
    std::swap(this->_data, other._data);
    this->_core.swap(other._core);
}

/**
 * @brief Return true if the Array is definitely unique.
 *
 * This will only return true if the manager overrides Manager::
isUnique();
but it is
 * this is true for the SimpleManager used by ndarray::allocate,
 * not true for ExternalManager.
 */
bool isUnique() const { return this->_core->isUnique(); }

private:
    template friend class Array;
    template friend class ArrayRef;
    template friend struct ArrayTraits;
    template friend class ArrayBase;

```

```

179 ^9ccb4c9 -      template friend struct detail::ArrayAccess;

```

?

^^^^^

```

179 33800a4f +      template friend class detail::ArrayAccess;

```

```
?                                     +++ ^

    /// @internal @brief Construct an Array from a pointer and Core.
    Array(T * data, CorePtr const & core) : Super(data, core) {}
};

} // namespace ndarray

#endif // !NDARRAY_Array_h_INCLUDED
```

[Return to list](#)

## Commits in /Users/nate/repos\_hsc/ndarray/

**^9ccb4c9**

## Commits in /Users/nate/repos\_lsst/ndarray/

**33800a4f**

```
commit 33800a4f53b5a67c85c566a894d81511faf2681d
Author: Jim Bosch
Date:   Fri Jan 24 15:15:08 2014 -0500
```

Fix clang warnings about class/struct mismatches (#3081)

[Return to list](#)

# include/ndarray/initialization.h

Diff:



fy

by

array.

```
// -*- c++ -*-
/*
 * LSST Data Management System
 * Copyright 2008, 2009, 2010, 2011 LSST Corporation.
 *
 * This product includes software developed by the
 * LSST Project (http://www.lsst.org/).
 *
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 *
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 * the GNU General Public License along with this program. If not,
 * see .
 */
#ifndef NDARRAY_initialization_h_INCLUDED
#define NDARRAY_initialization_h_INCLUDED

/**
 * \file ndarray/initialization.h @brief Construction functions for
 *
 */

#include "ndarray/Array.h"
#include "ndarray/Manager.h"

namespace ndarray {
namespace detail {

struct NullOwner {};

template
class Initializer {
public:

    template
```

```

        operator Array () const {
            return static_cast(this)->template apply< Array >();
        }

        template
        operator ArrayRef () const {
            return static_cast(this)->template apply< ArrayRef >();
        }

};

template
class SimpleInitializer : public Initializer< N, SimpleInitializer >
{
public:

    template
    Target apply() const {
        typedef detail::ArrayAccess< Target > Access;
        typedef typename Access::Core Core;
        typedef typename Access::Element Element;
        DataOrderEnum order = (ExpressionTraits< Target >::RMC::value
< 0) ? COLUMN_MAJOR : ROW_MAJOR;
        int total = _shape.product();
        std::pair p = SimpleManager::allocate(total);
        return Access::construct(p.second, Core::create(_shape, order
, p.first));
    }

    explicit SimpleInitializer(Vector const & shape) : _shape(shape)
{}

private:
    Vector _shape;
};

template
class ExternalInitializer : public Initializer< N, ExternalInitialize
r > {
public:

    template
    Target apply() const {
        typedef detail::ArrayAccess< Target > Access;
        typedef typename Access::Core Core;

```

83 [d7e2d1b0](#) - typedef typename Access::Element Element;

```
        Manager::Ptr manager;
        if (!boost::is_same::value) {
            manager = makeManager(_owner);
        }
        return Access::construct(_data, Core::create(_shape, _strides
, manager));
    }

    ExternalInitializer(
        T * data,
        Vector const & shape,
        Vector const & strides,
        Owner const & owner
    ) : _data(data), _owner(owner), _shape(shape), _strides(strides)
{}

private:
    T * _data;
    Owner _owner;
    Vector _shape;
    Vector _strides;
};

} // namespace detail

/// @addtogroup MainGroup
/// @{

/**
 * @brief Create an expression that allocates uninitialized memory f
or an array.
 *
 * @returns A temporary object convertible to an Array with fully co
ntiguous row-major strides.
 */
template
inline detail::SimpleInitializer allocate(Vector const & shape) {
    return detail::SimpleInitializer(shape);
}

/**
```

```

        * @brief Create an expression that allocates uninitialized memory f
or a 1-d array.
        *
        * @returns A temporary object convertible to an Array with fully co
ntiguous row-major strides.
        */
        inline detail::SimpleInitializer<1> allocate(int n) {
            return detail::SimpleInitializer<1>(ndarray::makeVector(n));
        }

        /**
        * @brief Create an expression that allocates uninitialized memory f
or a 2-d array.
        *
        * @returns A temporary object convertible to an Array with fully co
ntiguous row-major strides.
        */
        inline detail::SimpleInitializer<2> allocate(int n1, int n2) {
            return detail::SimpleInitializer<2>(ndarray::makeVector(n1, n2));
        }

        /**
        * @brief Create an expression that allocates uninitialized memory f
or a 3-d array.
        *
        * @returns A temporary object convertible to an Array with fully co
ntiguous row-major strides.
        */
        inline detail::SimpleInitializer<3> allocate(int n1, int n2, int n3)
{
            return detail::SimpleInitializer<3>(ndarray::makeVector(n1, n2, n
3));
        }

        /**
        * @brief Create a new Array by copying an Expression.
        */
        template
        inline ArrayRef::type,
            Derived::ND::value, Derived::ND::value>
        copy(ExpressionBase const & expr) {
            ArrayRef::type,
                Derived::ND::value, Derived::ND::value> r(
                allocate(expr.getShape())

```

```

        );
        r = expr;
        return r;
    }

    /// @brief Compute row- or column-major strides for the given shape.
    template
    Vector computeStrides(Vector const & shape, DataOrderEnum order=ROW_M
    AJOR) {
        Vector r(1);
        if (order == ROW_MAJOR) {
            for (int n=N-1; n > 0; --n) r[n-1] = r[n] * shape[n];
        } else {
            for (int n=1; n < N; ++n) r[n] = r[n-1] * shape[n-1];
        }
        return r;
    }

    /**
     * @brief Create an expression that initializes an Array with extern
    ally allocated memory.
     *
     * No checking is done to ensure the shape, strides, and data pointe
    rs are sensible.
     *
     * @param[in] data      A raw pointer to the first element of the Arr
    ay.
     * @param[in] shape     A Vector of dimensions for the new Array.
     * @param[in] strides   A Vector of strides for the new Array.
     * @param[in] owner     A copy-constructable object with an internal
    reference count
     *
     * that owns the memory pointed at by 'data'.
     *
     * @returns A temporary object convertible to an Array.
     */
    template
    inline detail::ExternalInitializer external(
        T * data,
        Vector const & shape,
        Vector const & strides,
        Owner const & owner
    ) {
        return detail::ExternalInitializer(data, shape, strides, owner);
    }

```

```

    /**
     * @brief Create an expression that initializes an Array with externally allocated memory.
     *
     * No checking is done to ensure the shape, strides, and data pointers are sensible. Memory will not
     * be managed at all; the user must ensure the data pointer remains valid for the lifetime of the array.
     *
     * @param[in] data      A raw pointer to the first element of the Array.
     *
     * @param[in] shape      A Vector of dimensions for the new Array.
     * @param[in] strides    A Vector of strides for the new Array.
     *
     * @returns A temporary object convertible to an Array.
    */
template
inline detail::ExternalInitializer external(
    T * data,
    Vector const & shape,
    Vector const & strides
) {
    return detail::ExternalInitializer(data, shape, strides, detail::NullOwner());
}

    /**
     * @brief Create an expression that initializes an Array with externally allocated memory.
     *
     * No checking is done to ensure the shape and data pointers are sensible.
     *
     * @param[in] data      A raw pointer to the first element of the Array.
     *
     * @param[in] shape      A Vector of dimensions for the new Array.
     * @param[in] order      Whether the strides are row- or column-major.
     * @param[in] owner      A copy-constructable object with an internal reference count
     *
     *                          that owns the memory pointed at by 'data'.
     *
     * @returns A temporary object convertible to an Array.
    */
template
inline detail::ExternalInitializer external(

```

```

        T * data,
        Vector const & shape,
        DataOrderEnum order,
        Owner const & owner
    ) {
        return detail::ExternalInitializer(data, shape, computeStrides(shape, order), owner);
    }

    /**
     * @brief Create an expression that initializes an Array with externally allocated memory.
     *
     * No checking is done to ensure the shape and data pointers are sensible. Memory will not
     * be managed at all; the user must ensure the data pointer remains valid for the lifetime of the array.
     *
     * @param[in] data      A raw pointer to the first element of the Array.
     *
     * @param[in] shape      A Vector of dimensions for the new Array.
     * @param[in] order      Whether the strides are row- or column-major.
     *
     * @returns A temporary object convertible to an Array.
     */
    template
    inline detail::ExternalInitializer external(
        T * data,
        Vector const & shape,
        DataOrderEnum order = ROW_MAJOR
    ) {
        return detail::ExternalInitializer(
            data, shape, computeStrides(shape, order), detail::NullOwner()
        );
    }

    /// @}

} // namespace ndarray

#endif // !NDARRAY_initialization_h_INCLUDED

```

## Commits in /Users/nate/repos\_hsc/ndarray/

d7e2d1b0

```
commit d7e2d1b0e1cc215ae737eb47cd13bb865aafce5e
```

```
Author: jbosch
```

```
Date:   Wed Feb 16 09:00:54 2011 +0000
```

```
    ndarray - synced from extrnal (added tables, switch to custom Manager clas  
s instead of shared_ptr ownership)
```

## Commits in /Users/nate/repos\_lsst/ndarray/

[Return to list](#)

## include/ndarray/ArrayBase.h

Diff:

```
// -*- c++ -*-  
/*  
 * LSST Data Management System  
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 *  
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 * (at your option) any later version.  
 *  
 * This program is distributed in the hope that it will be useful,  
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```



```

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*
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* the GNU General Public License along with this program.  If not,
* see .
*/
#ifndef NDARRAY_ArrayBase_h_INCLUDED
#define NDARRAY_ArrayBase_h_INCLUDED

/**
 * @file ndarray/ArrayBase.h
 *
 * @brief Definitions for ArrayBase.
 */

#include

#include "ndarray/ExpressionBase.h"
#include "ndarray/Vector.h"
#include "ndarray/detail/Core.h"
#include "ndarray/detail/NestedIterator.h"
#include "ndarray/detail/StridedIterator.h"
#include "ndarray/detail/ArrayAccess.h"
#include "ndarray/detail/ViewBuilder.h"
#include "ndarray/ArrayTraits.h"
#include "ndarray/eigen_fwd.h"

namespace ndarray {

/**
 * @class ArrayBase
 * @brief CRTP implementation for Array and ArrayRef.
 *
 * @ingroup MainGroup
 *
 * Implements member functions that need specialization for 1D array
 *
 */
template
class ArrayBase : public ExpressionBase {
protected:
    typedef ExpressionTraits Traits;
    typedef typename Traits::Core Core;

```

s.

```

        typedef typename Traits::CorePtr CorePtr;
public:
    /// @brief Data type of array elements.
    typedef typename Traits::Element Element;
    /// @brief Nested array or element iterator.
    typedef typename Traits::Iterator Iterator;
    /// @brief Nested array or element reference.
    typedef typename Traits::Reference Reference;
    /// @brief Nested array or element value type.
    typedef typename Traits::Value Value;
    /// @brief Number of dimensions (boost::mpl::int_).
    typedef typename Traits::ND ND;
    /// @brief Number of guaranteed row-major contiguous dimensions,
counted from the end (boost::mpl::int_).
    typedef typename Traits::RMC RMC;
    /// @brief Vector type for N-dimensional indices.
    typedef Vector Index;
    /// @brief ArrayRef to a reverse-ordered contiguous array; the re
sult of a call to transpose().
    typedef ArrayRef FullTranspose;
    /// @brief ArrayRef to a noncontiguous array; the result of a cal
l to transpose(...).
    typedef ArrayRef Transpose;
    /// @brief The corresponding Array type.
    typedef Array Shallow;
    /// @brief The corresponding ArrayRef type.
    typedef ArrayRef Deep;

    /// @brief Return a single subarray.
    Reference operator[](int n) const {
        return Traits::makeReference(
            this->_data + n * this->template getStride<0>(),
            this->_core
        );
    }

    /// @brief Return a single element from the array.
    Element & operator[](Index const & i) const {
        return *(this->_data + this->_core->template computeOffset(i)
);
    }

    /// @brief Return an Iterator to the beginning of the array.
    Iterator begin() const {
        return Traits::makeIterator(

```

```

        this->_data,
        this->_core,
        this->template getStride<0>()
    );
}

/// @brief Return an Iterator to one past the end of the array.
Iterator end() const {
    return Traits::makeIterator(
        this->_data + this->template getSize<0>() * this->templat
e getStride<0>(),
        this->_core,
        this->template getStride<0>()
    );
}

/// @brief Return a raw pointer to the first element of the array
.
Element * getData() const { return _data; }

/// @brief Return true if the array has a null data point.
bool isEmpty() const { return _data == 0; }

/// @brief Return the opaque object responsible for memory manage
ment.
Manager::Ptr getManager() const { return this->_core->getManager(
); }

/// @brief Return the size of a specific dimension.
template int getSize() const {
    return detail::getDimension
(*this->_core).getSize();
}

/// @brief Return the stride in a specific dimension.
template int getStride() const {
    return detail::getDimension
(*this->_core).getStride();
}

/// @brief Return a Vector of the sizes of all dimensions.
Index getShape() const { Index r; this->_core->fillShape(r); retu
rn r; }

```

```

    /// @brief Return a Vector of the strides of all dimensions.
    Index getStrides() const { Index r; this->_core->fillStrides(r);

return r; }

    /// @brief Return the total number of elements in the array.
    int getNumElements() const { return this->_core->getNumElements()

; }

    /// @brief Return a view of the array with the order of the dimen
sions reversed.

    FullTranspose transpose() const {
        Index shape = getShape();
        Index strides = getStrides();
        for (int n=0; n < ND::value / 2; ++n) {
            std::swap(shape[n], shape[ND::value-n-1]);
            std::swap(strides[n], strides[ND::value-n-1]);
        }
        return FullTranspose(
            getData(),
            Core::create(shape, strides, getManager())
        );
    }

    /// @brief Return a view of the array with the dimensions permute
d.

    Transpose transpose(Index const & order) const {
        Index newShape;
        Index newStrides;
        Index oldShape = getShape();
        Index oldStrides = getStrides();
        for (int n=0; n < ND::value; ++n) {
            newShape[n] = oldShape[order[n]];
            newStrides[n] = oldStrides[order[n]];
        }
        return Transpose(
            getData(),
            Core::create(newShape, newStrides, getManager())
        );
    }

    /// @brief Return a Array view to this.
    Shallow const shallow() const { return Shallow(this->getSelf());

}

```

```

/// @brief Return an ArrayRef view to this.
Deep const deep() const { return Deep(this->getSelf()); }

//@{
/**
 * @name Eigen3 Interface
 *
 * These methods return Eigen3 views to the array. Template
 * parameters optionally control the expression type (Matrix/Arr
ay) and
 * the compile-time dimensions.
 *
 * The inline implementation is included by ndarray/eigen.h.
 */
template
EigenView asEigen() const;

template
EigenView asEigen() const;

template
EigenView asEigen() const;

EigenView asEigen() const;
//@}

/// @brief A template metafunction class to determine the result
of a view indexing operation.
template
struct ResultOf {
    typedef Element Element_;
    typedef typename detail::ViewTraits::ND ND_;
    typedef typename detail::ViewTraits::RMC RMC_;
    typedef ArrayRef Type;
    typedef Array Value;
};

/// @brief Return a general view into this array (see @ref ndarra
yTutorial).
template
typename ResultOf< View >::Type
operator[](View const & def) const {
    return detail::buildView(this->getSelf(), def._seq);
}

```

```
protected:
    template friend class Array;
    template friend class ArrayRef;
    template friend struct ArrayTraits;
    template friend class detail::NestedIterator;
    template friend class ArrayBase;
```

```
225 ^9ccb4c9 -      template friend struct detail::ArrayAccess;
```

```
?                                ^^^^^
```

```
225 33800a4f +      template friend class detail::ArrayAccess;
```

```
?                                +++ ^
```

```

    Element * _data;
    CorePtr _core;

    void operator=(ArrayBase const & other) {
        _data = other._data;
        _core = other._core;
    }

    ArrayBase(Element * data, CorePtr const & core) : _data(data), _c
ore(core) {}

};

} // namespace ndarray

#endif // !NDARRAY_ArrayBase_h_INCLUDED
```

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## Commits in /Users/nate/repos\_hsc/ndarray/

**^9ccb4c9**

## Commits in /Users/nate/repos\_lsst/ndarray/

**33800a4f**

```
commit 33800a4f53b5a67c85c566a894d81511faf2681d
```

```
Author: Jim Bosch
```

```
Date: Fri Jan 24 15:15:08 2014 -0500
```

```
Fix clang warnings about class/struct mismatches (#3081)
```

[Return to list](#)

## ups/ndarray.table

**Diff:**

```
1 7f3065b0 - setupRequired(boost >= 1.47.0)
```

```
? -----
```

```
1 6ad128e5 + setupRequired(boost)
```

```
setupRequired(python)
```

```
3 fb4d216b - setupRequired(numpy >= 1.5)
```

```
? -----
```

```
3 6ad128e5 + setupRequired(numpy)
```

```
4 df988f4b - setupRequired(eigen >= 3.0.0)
```

? -----

4 [6ad128e5](#) + setupRequired(eigen)

5 [7f3065b0](#) - setupRequired(base >= 4.6.0.0)

? -----

5 [6ad128e5](#) + setupRequired(base)

setupRequired(swig)

7 [fb4d216b](#) - setupRequired(fftw >= 3.1)

? -----

7 [6ad128e5](#) + setupRequired(fftw)

9 [955f9cb7](#) - envAppend(PYTHONPATH, \${PRODUCT\_DIR}/python)

? ^^

9 [82b9a38f](#) + envPrepend(PYTHONPATH, \${PRODUCT\_DIR}/python)

? ^^^

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## Commits in /Users/nate/repos\_hsc/ndarray/

7f3065b0



```
commit 7f3065b0b1db306ee96118e760d122fb6cc2ac2e
Author: jbosch
Date: Tue Oct 18 21:44:53 2011 +0000
```

#1780 - lots of dependency tree fixes; removed separate scones package

## fb4d216b

```
commit fb4d216bb771637fbcfab73988414b6890c98785
Author: rhl
Date: Mon Nov 7 21:44:13 2011 +0000
```

Relax python/numpy/fftw requirements

## df988f4b

```
commit df988f4bf8d582d775203725ce098234851469e5
Author: jbosch
Date: Mon Sep 26 18:58:31 2011 +0000
```

ndarray #1752 - synced with upstream ndarray eigen3 branch

## 955f9cb7

```
commit 955f9cb7356d9fa1151fcfa93ca8aeccb64abedd
Author: Jim Bosch
Date: Wed Nov 16 22:47:31 2011 -0500
```

added support for git-based version introspection

## Commits in /Users/nate/repos\_Isst/ndarray/

---

## 6ad128e5

commit 6ad128e5a208d54410538ba298c44fc70fed79c0

Author: Mario Juric

Date: Wed Mar 5 16:29:24 2014 -0600

removed explicit versions from the table file.

## 82b9a38f

commit 82b9a38f2aabc061dfe06d0971f1c3726f5f7d4c

Author: Robyn Allsman

Date: Fri Nov 14 20:52:45 2014 -0600

Replace envAppend with envPrepend in ups table files.

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