



BO

BO







20

40

10

10

W E







0123456789



02

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10

100





WAVE











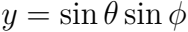


$$x(0), \dots, x(n-1), y(0), \dots, y(n-1), z(0), \dots, z(n-1)$$



WIPES OFF







COOL-1 W W

2011-11-11 11:11

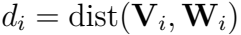




disadvantaged

disadvantage





$\varphi_1, \varphi_2, \varphi_3, \varphi_4, \varphi_5, \varphi_6, \varphi_7, \varphi_8, \varphi_9, \varphi_{10}, \varphi_{11}, \varphi_{12}, \varphi_{13}, \varphi_{14}, \varphi_{15}, \varphi_{16}, \varphi_{17}, \varphi_{18}, \varphi_{19}, \varphi_{20}, \varphi_{21}, \varphi_{22}, \varphi_{23}, \varphi_{24}, \varphi_{25}, \varphi_{26}, \varphi_{27}, \varphi_{28}, \varphi_{29}, \varphi_{30}, \varphi_{31}, \varphi_{32}, \varphi_{33}, \varphi_{34}, \varphi_{35}, \varphi_{36}, \varphi_{37}, \varphi_{38}, \varphi_{39}, \varphi_{40}, \varphi_{41}, \varphi_{42}, \varphi_{43}, \varphi_{44}, \varphi_{45}, \varphi_{46}, \varphi_{47}, \varphi_{48}, \varphi_{49}, \varphi_{50}, \varphi_{51}, \varphi_{52}, \varphi_{53}, \varphi_{54}, \varphi_{55}, \varphi_{56}, \varphi_{57}, \varphi_{58}, \varphi_{59}, \varphi_{60}, \varphi_{61}, \varphi_{62}, \varphi_{63}, \varphi_{64}, \varphi_{65}, \varphi_{66}, \varphi_{67}, \varphi_{68}, \varphi_{69}, \varphi_{70}, \varphi_{71}, \varphi_{72}, \varphi_{73}, \varphi_{74}, \varphi_{75}, \varphi_{76}, \varphi_{77}, \varphi_{78}, \varphi_{79}, \varphi_{80}, \varphi_{81}, \varphi_{82}, \varphi_{83}, \varphi_{84}, \varphi_{85}, \varphi_{86}, \varphi_{87}, \varphi_{88}, \varphi_{89}, \varphi_{90}, \varphi_{91}, \varphi_{92}, \varphi_{93}, \varphi_{94}, \varphi_{95}, \varphi_{96}, \varphi_{97}, \varphi_{98}, \varphi_{99}, \varphi_{100}$



BO





$$\int d\mathbf{r} \, b(\mathbf{r}) \, Y_{\ell m}^*(\mathbf{r})$$





$$b_{\ell 0} \sqrt{\frac{4\pi}{2\ell+1}}$$

$$\int b(\theta) P_e(\theta) \sin(\theta) d\theta \quad 2\pi$$



2000-2000

$$O(b)\sqrt{2/b} + 1)\Delta(b)$$

1000

10

+

1

00

2

π





$$b(\mathbf{r}) = \sum_{lm} b_{lm} Y_{lm}(\mathbf{r});$$

$$b(\theta) = \sum_{\ell} b(\ell) P_{\ell}(\theta) \frac{2\ell + 1}{4\pi},$$

$$b(\ell) = b_{\ell 0} \sqrt{\frac{4\pi}{2\ell + 1}}$$



`euler_matrix_new` allows the generation of a rotation Euler matrix. The user can choose the three Euler angles, and the three axes of rotation.

If `vec` is an  $N \times 3$  array containing  $N$  3D vectors,

`vecr = vec # euler_matrix_new(a1,a2,a3,/Y)`

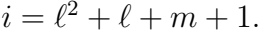
will be the rotated vectors. Alternatively, `rotate_coord` can also be used to rotate `vec` into `vecr`.

This routine supersedes `euler_matrix`, which had inconsistent angle definitions. The relation between the two routines is as follows :

`euler_matrix_new(a,b,c,/X) = euler_matrix(-a,-b,-c,/X)`  
`= Transpose(euler_matrix(c, b, a,/X))`

`euler_matrix_new(a,b,c,/Y) = euler_matrix(-a, b,-c,/Y)`  
`= Transpose(euler_matrix(c,-b, a,/Y))`

`euler_matrix_new(a,b,c,/Z) = euler_matrix(-a, b,-c,/Z)`





$C_0 = \sum_{n=0}^{\infty} C_n x^n$



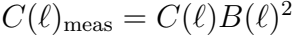


$e^{\pi i/4}$

A pixelated, black and white graphic of the text "100% REAL". The characters are rendered in a thick, outlined, sans-serif font. The "1" is a simple vertical bar with a short horizontal base. The "0"s are circles with a slight gap at the bottom. The "%" symbol is composed of a circle and a vertical line with a horizontal crossbar. The "R" is a bold, blocky letter. The "E" is also bold and blocky. The "L" is a simple vertical bar with a short horizontal base. The "A" is a simple triangle with a horizontal crossbar. The entire text is set against a white background.









12

12

12

12

12

side

should produce something like

*196608 128 256 2*

meaning that the map contained in that file has 196608 pixels, the resolution parameter is nside=128, the maximum multipole was 256, and this a full sky map (type 2).

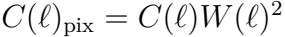






$$\sqrt{3/\pi}$$

$$3600/N_{\text{side}}$$



will print out

```
<Expression>      INT      =      1
```

```
A+1      INT      =      1
```

$$a_{lm}^{\text{OUT}} = a_{lm}^{\text{IN}} \frac{B^{\text{OUT}}(\ell) P^{\text{OUT}}(\ell)}{B^{\text{IN}}(\ell) P^{\text{IN}}(\ell)},$$

100

POE = 1



BOLE = 1







$\psi = \sin \left( \frac{\pi}{2} \right)$





1120

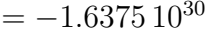




$\sin^{-1}(\sin 2)$

Q21x

esloges





**QED**





12.03.2017



0 = 1001000000



11.02.21



W w W w W w W w W w

$$N_w = \frac{(N_{\text{side}} + 1)(3N_{\text{side}} + 1)}{4}.$$



$$N_{\text{template}} = \frac{1 + N_{\text{side}}(N_{\text{side}} + 6)}{4}.$$



2022-2023

2022-2023

2023-2024

exp(0), exp(1),

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2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 2680, 2681, 26



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2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 2680, 2681, 26

75

3π4

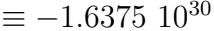
ex 1/2 odds













Quesada vs. Quesada

$$I = I \cos(\Delta\varphi) + I \sin(\Delta\varphi)$$

$$2 = \cos \theta / 2 \quad 2 = \sin \theta / 2$$

$$2/3 \geq z \geq 0, \quad \phi = 0, \quad \text{or} \quad \phi = \frac{\pi}{4N_{\text{side}}}.$$





$$2/3 \geq z \geq 0, \quad \phi = 0, \quad \text{or} \quad \phi = \frac{\pi}{4N_{\text{side}}}.$$

if set, during **degradation** each big pixel containing one bad or missing small pixel is also considered as bad,

if not set, each big pixel containing at least one good pixel is considered as good (optimistic) default = 0 (:not set)

1v2 side 1v2







`write_fits_sb` writes out the information contained in `Prim_stc` and `Exten_stc` in the primary unit and extension of the FITS file `File` respectively. Coordinate systems can also be specified by `Coordsys`. Specifying the ordering scheme is compulsory for **HEALPix** data sets and can be done either in `Header` or by setting `Ordering` or `Nested` or `Ring` to the correct value. If `Ordering` or `Nested` or `Ring` is set, its value overrides what is given in `Header`.

The data is assumed to represent a full sky data set with the number of data points  $\text{npix} = 12 * \text{Nside} * \text{Nside}$  unless `Partial` is set *or* the input FITS header contains `OBJECT = 'PARTIAL'`

AND  
the `Nside` qualifier is given a valid value *or* the FITS header contains a `NSIDE`.

In the **HEALPix** scheme, invalid or missing pixels should be given the value `!healpix.bad_value = -1.63750 1030`.

If `Nohealpix` is set, the restrictions on `Nside` are void.