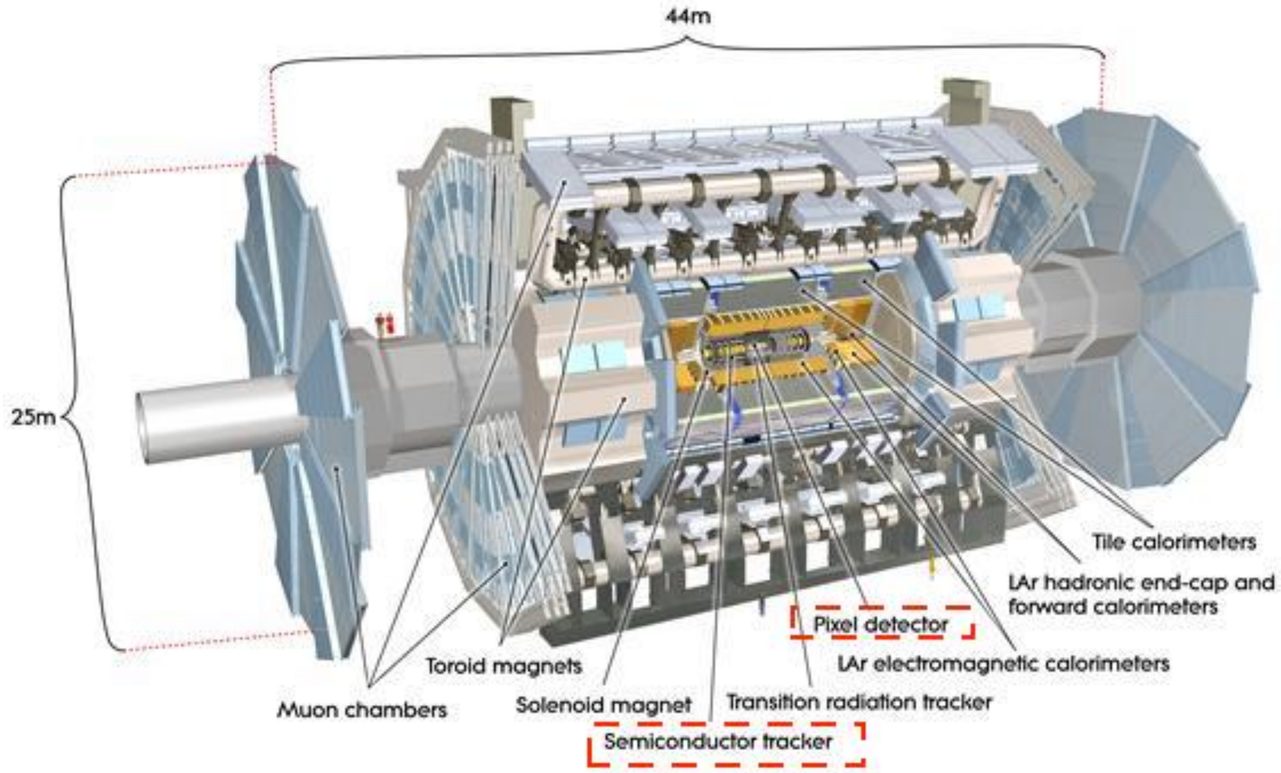
RD53B website update

Instrumentation meeting 8/6/2020 (week 12, 2020 summer)

Robin Junwen Xiong

RD53B

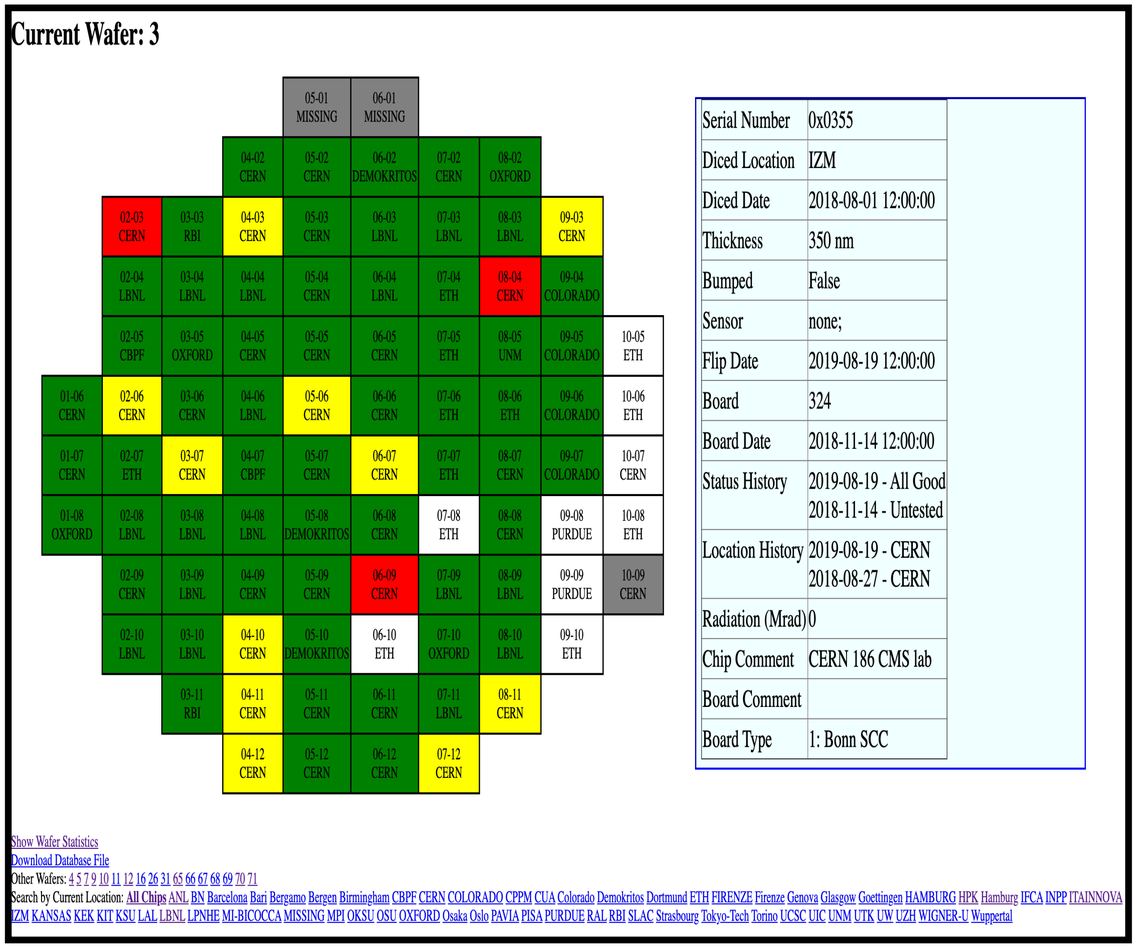
The readout chips for the ATLAS and CMS HL-LHC pixel detectors



- The upgraded version of RD53A

RD53B website

There is a website to present all the RD53B chips.

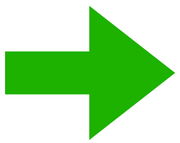


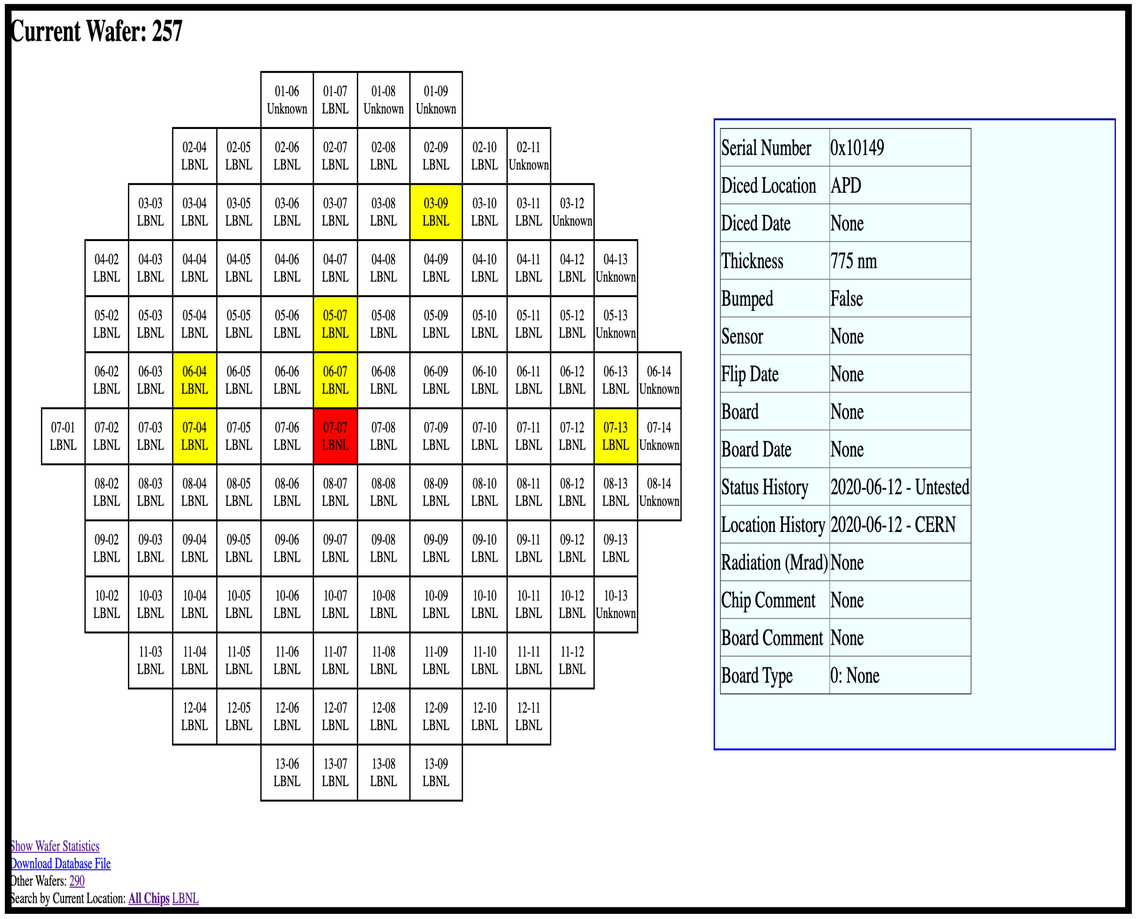
Current Wafer: 3

			05-01 MISSING	06-01 MISSING					
		04-02 CERN	05-02 CERN	06-02 DEMOKRITOS	07-02 CERN	08-02 OXFORD			
	02-03 CERN	03-03 RBI	04-03 CERN	05-03 CERN	06-03 LBNL	07-03 LBNL	08-03 LBNL	09-03 CERN	
	02-04 LBNL	03-04 LBNL	04-04 LBNL	05-04 CERN	06-04 LBNL	07-04 ETH	08-04 CERN	09-04 COLORADO	
	02-05 CBPF	03-05 OXFORD	04-05 CERN	05-05 CERN	06-05 CERN	07-05 ETH	08-05 UNM	09-05 COLORADO	10-05 ETH
01-06 CERN	02-06 CERN	03-06 CERN	04-06 LBNL	05-06 CERN	06-06 CERN	07-06 ETH	08-06 ETH	09-06 COLORADO	10-06 ETH
01-07 CERN	02-07 ETH	03-07 CERN	04-07 CBPF	05-07 CERN	06-07 CERN	07-07 ETH	08-07 CERN	09-07 COLORADO	10-07 CERN
01-08 OXFORD	02-08 LBNL	03-08 LBNL	04-08 LBNL	05-08 DEMOKRITOS	06-08 CERN	07-08 ETH	08-08 CERN	09-08 PURDUE	10-08 ETH
	02-09 CERN	03-09 LBNL	04-09 CERN	05-09 CERN	06-09 CERN	07-09 LBNL	08-09 LBNL	09-09 PURDUE	10-09 CERN
	02-10 LBNL	03-10 LBNL	04-10 CERN	05-10 DEMOKRITOS	06-10 ETH	07-10 OXFORD	08-10 LBNL	09-10 ETH	
		03-11 RBI	04-11 CERN	05-11 CERN	06-11 CERN	07-11 LBNL	08-11 CERN		
			04-12 CERN	05-12 CERN	06-12 CERN	07-12 CERN			

Serial Number	0x0355
Diced Location	IZM
Diced Date	2018-08-01 12:00:00
Thickness	350 nm
Bumped	False
Sensor	none;
Flip Date	2019-08-19 12:00:00
Board	324
Board Date	2018-11-14 12:00:00
Status History	2019-08-19 - All Good 2018-11-14 - Untested
Location History	2019-08-19 - CERN 2018-08-27 - CERN
Radiation (Mrad)	0
Chip Comment	CERN 186 CMS lab
Board Comment	
Board Type	1: Bonn SCC

Show Wafer Statistics
Download Database File
Other Wafers: 4 5 7 9 10 11 12 16 26 31 65 66 67 68 69 70 71
Search by Current Location: All Chips ANL BN Barcelona Bari Bergamo Bergen Birmingham CBPF CERN COLORADO CPPM CUA Colorado Demokritos Dortmund ETH FIRENZE Firenze Genova Glasgow Goettingen HAMBURG HPK Hamburg IFCA INPP ITAINNOVA IZM KANSAS KEK KIT KSU LAL LBNL LPNHE MI-BICOCCA MISSING MPI OKSU OSU OXFORD Osaka Oslo PAVIA PISA PURDUE RAL RBI SLAC Strasbourg Tokyo-Tech Torino UCSC UIC UNM UTK UW UZH WIGNER-U Wuppertal





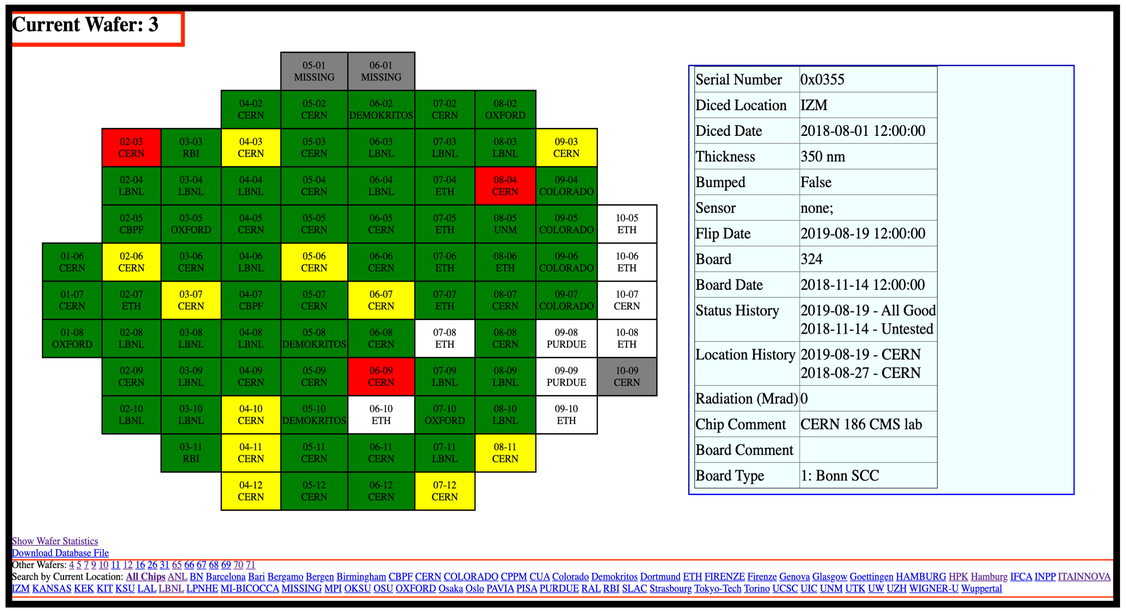
Current Wafer: 257

			01-06 Unknown	01-07 LBNL	01-08 Unknown	01-09 Unknown						
		02-04 LBNL	02-05 LBNL	02-06 LBNL	02-07 LBNL	02-08 LBNL	02-09 LBNL	02-10 LBNL	02-11 Unknown			
	03-03 LBNL	03-04 LBNL	03-05 LBNL	03-06 LBNL	03-07 LBNL	03-08 LBNL	03-09 LBNL	03-10 LBNL	03-11 LBNL	03-12 Unknown		
04-02 LBNL	04-03 LBNL	04-04 LBNL	04-05 LBNL	04-06 LBNL	04-07 LBNL	04-08 LBNL	04-09 LBNL	04-10 LBNL	04-11 LBNL	04-12 LBNL	04-13 Unknown	
05-02 LBNL	05-03 LBNL	05-04 LBNL	05-05 LBNL	05-06 LBNL	05-07 LBNL	05-08 LBNL	05-09 LBNL	05-10 LBNL	05-11 LBNL	05-12 LBNL	05-13 Unknown	
06-02 LBNL	06-03 LBNL	06-04 LBNL	06-05 LBNL	06-06 LBNL	06-07 LBNL	06-08 LBNL	06-09 LBNL	06-10 LBNL	06-11 LBNL	06-12 LBNL	06-13 LBNL	06-14 Unknown
07-01 LBNL	07-02 LBNL	07-03 LBNL	07-04 LBNL	07-05 LBNL	07-06 LBNL	07-07 LBNL	07-08 LBNL	07-09 LBNL	07-10 LBNL	07-11 LBNL	07-12 LBNL	07-13 LBNL	07-14 Unknown
08-02 LBNL	08-03 LBNL	08-04 LBNL	08-05 LBNL	08-06 LBNL	08-07 LBNL	08-08 LBNL	08-09 LBNL	08-10 LBNL	08-11 LBNL	08-12 LBNL	08-13 LBNL	08-14 Unknown
09-02 LBNL	09-03 LBNL	09-04 LBNL	09-05 LBNL	09-06 LBNL	09-07 LBNL	09-08 LBNL	09-09 LBNL	09-10 LBNL	09-11 LBNL	09-12 LBNL	09-13 LBNL	
10-02 LBNL	10-03 LBNL	10-04 LBNL	10-05 LBNL	10-06 LBNL	10-07 LBNL	10-08 LBNL	10-09 LBNL	10-10 LBNL	10-11 LBNL	10-12 LBNL	10-13 Unknown	
	11-03 LBNL	11-04 LBNL	11-05 LBNL	11-06 LBNL	11-07 LBNL	11-08 LBNL	11-09 LBNL	11-10 LBNL	11-11 LBNL	11-12 LBNL		
		12-04 LBNL	12-05 LBNL	12-06 LBNL	12-07 LBNL	12-08 LBNL	12-09 LBNL	12-10 LBNL	12-11 LBNL			
				13-06 LBNL	13-07 LBNL	13-08 LBNL	13-09 LBNL					

Serial Number	0x10149
Diced Location	APD
Diced Date	None
Thickness	775 nm
Bumped	False
Sensor	None
Flip Date	None
Board	None
Board Date	None
Status History	2020-06-12 - Untested
Location History	2020-06-12 - CERN
Radiation (Mrad)	None
Chip Comment	None
Board Comment	None
Board Type	0: None

Show Wafer Statistics
Download Database File
Other Wafers: 290
Search by Current Location: All Chips LBNL

RD53B website

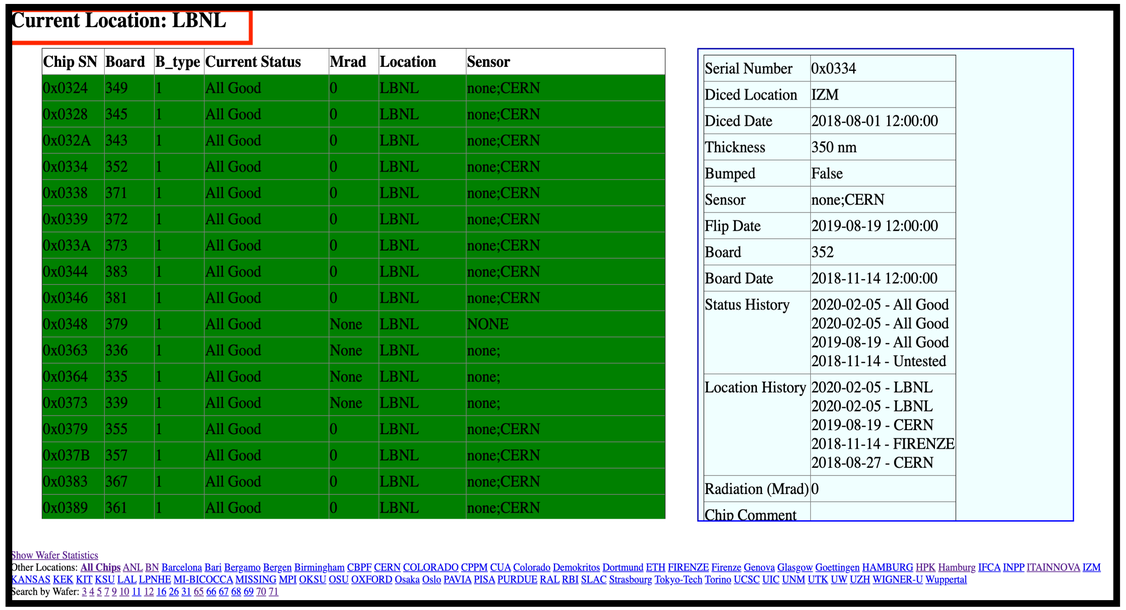


Current Wafer: 3

			05-01 MISSING	06-01 MISSING					
		04-02 CERN	05-02 CERN	06-02 DEMOKRITOS	07-02 CERN	08-02 OXFORD			
	02-03 CERN	03-03 RBI	04-03 CERN	05-03 CERN	06-03 LBNL	07-03 LBNL	08-03 LBNL	09-03 CERN	
	02-04 LBNL	03-04 LBNL	04-04 LBNL	05-04 CERN	06-04 LBNL	07-04 ETH	08-04 CERN	09-04 COLORADO	
	02-05 CBPF	03-05 OXFORD	04-05 CERN	05-05 CERN	06-05 CERN	07-05 ETH	08-05 UNM	09-05 COLORADO	10-05 ETH
01-06 CERN	02-06 CERN	03-06 CERN	04-06 LBNL	05-06 CERN	06-06 CERN	07-06 ETH	08-06 ETH	09-06 COLORADO	10-06 ETH
01-07 CERN	02-07 ETH	03-07 CERN	04-07 CBPF	05-07 CERN	06-07 CERN	07-07 ETH	08-07 CERN	09-07 COLORADO	10-07 CERN
01-08 OXFORD	02-08 LBNL	03-08 LBNL	04-08 LBNL	05-08 DEMOKRITOS	06-08 CERN	07-08 ETH	08-08 CERN	09-08 PURDUE	10-08 ETH
	02-09 CERN	03-09 LBNL	04-09 CERN	05-09 CERN	06-09 CERN	07-09 LBNL	08-09 LBNL	09-09 PURDUE	10-09 CERN
	02-10 LBNL	03-10 LBNL	04-10 CERN	05-10 DEMOKRITOS	06-10 ETH	07-10 OXFORD	08-10 LBNL	09-10 ETH	
		03-11 RBI	04-11 CERN	05-11 CERN	06-11 CERN	07-11 LBNL	08-11 CERN		
			04-12 CERN	05-12 CERN	06-12 CERN	07-12 CERN			

Serial Number	0x0355
Diced Location	IZM
Diced Date	2018-08-01 12:00:00
Thickness	350 nm
Bumped	False
Sensor	none;
Flip Date	2019-08-19 12:00:00
Board	324
Board Date	2018-11-14 12:00:00
Status History	2019-08-19 - All Good 2018-11-14 - Untested
Location History	2019-08-19 - CERN 2018-08-27 - CERN
Radiation (Mrad)	0
Chip Comment	CERN 186 CMS lab
Board Comment	
Board Type	1: Bonn SCC

Show Wafer Statistics
Download Database File
Other Wafers: 4 5 7 9 10 11 12 16 26 31 65 66 67 68 69 70 71
Search by Current Location: All Chips ANL BN Barcelona Bari Bergamo Bergen Birmingham CBPF CERN COLORADO CPPM CUA Colorado Demokritos Dortmund ETH FIRENZE Firenze Genova Glasgow Goettingen HAMBURG HPK Hamburg IFCA INPP ITAINNOVA IZM KANSAS KEK KIT KSU LAL LBNL LPNHE MI-BICOCCA MISSING MPI OKSU OSU OXFORD Osaka Oslo PAVIA PISA PURDUE RAL RBI SLAC Strasbourg Tokyo-Tech Torino UCSC UIC UNM UTK UW UZH WIGNER-U Wuppertal



Current Location: LBNL

Chip SN	Board	B_type	Current Status	Mrad	Location	Sensor
0x0324	349	1	All Good	0	LBNL	none;CERN
0x0328	345	1	All Good	0	LBNL	none;CERN
0x032A	343	1	All Good	0	LBNL	none;CERN
0x0334	352	1	All Good	0	LBNL	none;CERN
0x0338	371	1	All Good	0	LBNL	none;CERN
0x0339	372	1	All Good	0	LBNL	none;CERN
0x033A	373	1	All Good	0	LBNL	none;CERN
0x0344	383	1	All Good	0	LBNL	none;CERN
0x0346	381	1	All Good	0	LBNL	none;CERN
0x0348	379	1	All Good	None	LBNL	NONE
0x0363	336	1	All Good	None	LBNL	none;
0x0364	335	1	All Good	None	LBNL	none;
0x0373	339	1	All Good	None	LBNL	none;
0x0379	355	1	All Good	0	LBNL	none;CERN
0x037B	357	1	All Good	0	LBNL	none;CERN
0x0383	367	1	All Good	0	LBNL	none;CERN
0x0389	361	1	All Good	0	LBNL	none;CERN

Serial Number	0x0334
Diced Location	IZM
Diced Date	2018-08-01 12:00:00
Thickness	350 nm
Bumped	False
Sensor	none;CERN
Flip Date	2019-08-19 12:00:00
Board	352
Board Date	2018-11-14 12:00:00
Status History	2020-02-05 - All Good 2020-02-05 - All Good 2019-08-19 - All Good 2018-11-14 - Untested
Location History	2020-02-05 - LBNL 2020-02-05 - LBNL 2019-08-19 - CERN 2018-11-14 - FIRENZE 2018-08-27 - CERN
Radiation (Mrad)	0
Chip Comment	

Show Wafer Statistics
Other Locations: All Chips ANL BN Barcelona Bari Bergamo Bergen Birmingham CBPF CERN COLORADO CPPM CUA Colorado Demokritos Dortmund ETH FIRENZE Firenze Genova Glasgow Goettingen HAMBURG HPK Hamburg IFCA INPP ITAINNOVA IZM KANSAS KEK KIT KSU LAL LPNHE MI-BICOCCA MISSING MPI OKSU OSU OXFORD Osaka Oslo PAVIA PISA PURDUE RAL RBI SLAC Strasbourg Tokyo-Tech Torino UCSC UIC UNM UTK UW UZH WIGNER-U Wuppertal
Search by Wafer: 3 4 5 7 9 10 11 12 16 26 31 65 66 67 68 69 70 71

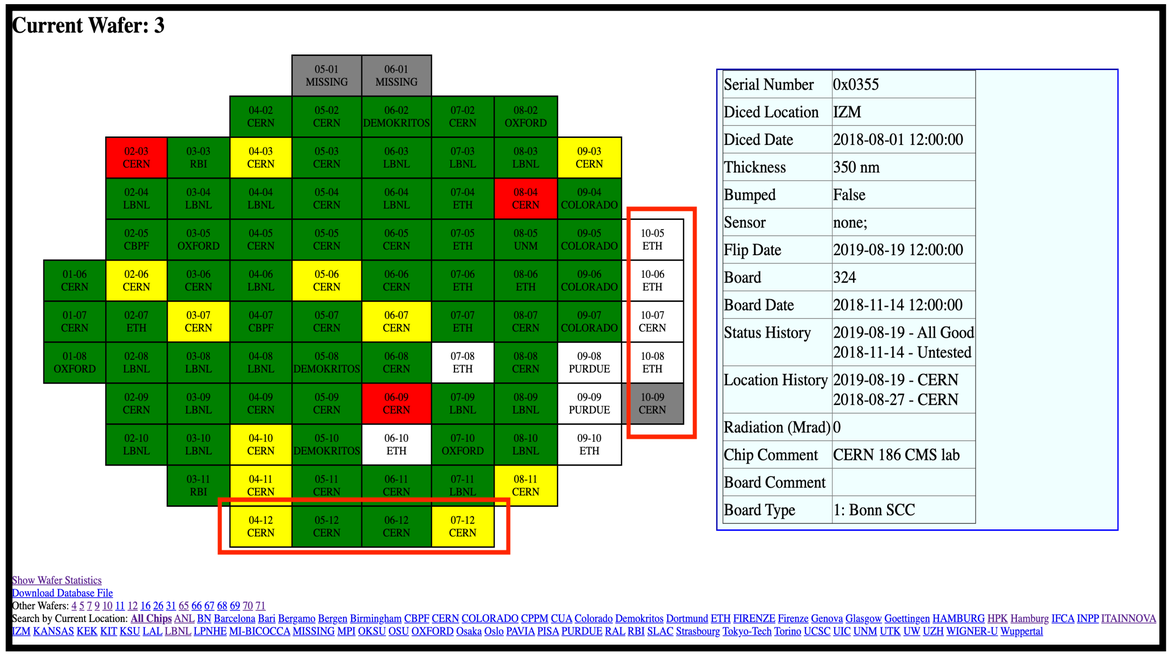
The RD53B website keeps the same structure as the RD53A website.

- Chips can be searched through wafers on which they're produced or through locations where they are now.
- The blue table on the side presents all the information about the chip, such as its serial number, the board where it's used, the location history, etc.
- The website also allows people to download the database file.

RD53B website

Changes from the RD53A website:

- Link the website to the RD53B data base
- Change the wafer map from the 12x10 grid to a 13x14 grid

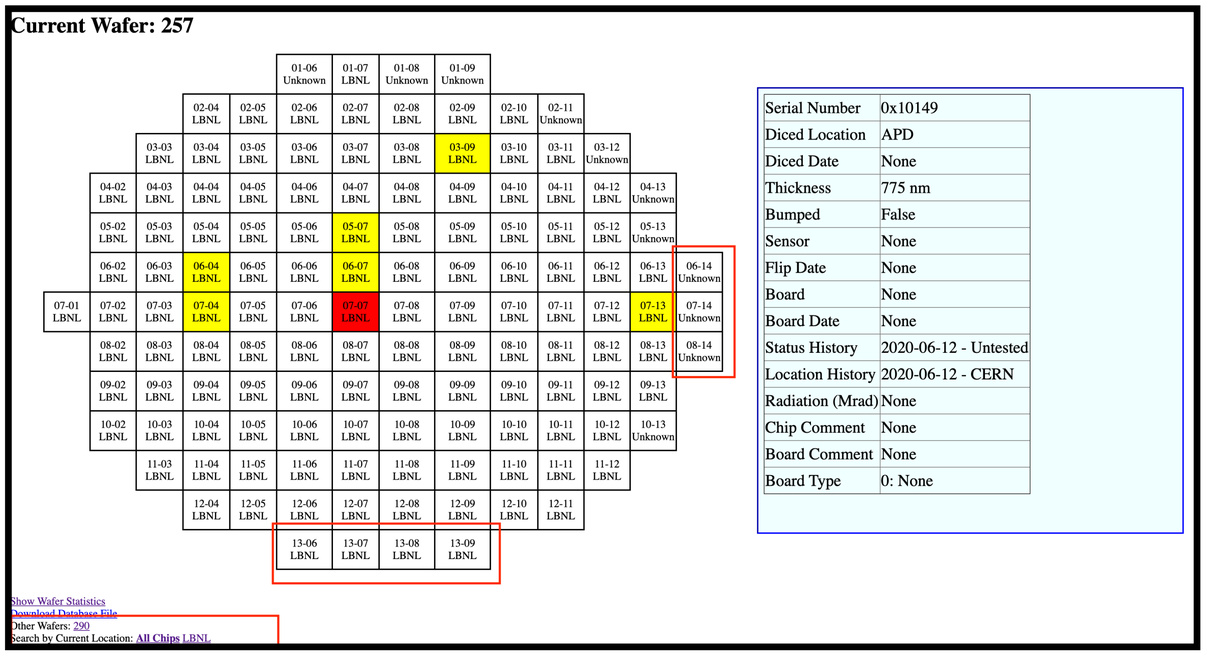


Current Wafer: 3

			05-01 MISSING	06-01 MISSING					
		04-02 CERN	05-02 CERN	06-02 DEMOKRITOS	07-02 CERN	08-02 OXFORD			
	02-03 CERN	03-03 RBI	04-03 CERN	05-03 CERN	06-03 LBNL	07-03 LBNL	08-03 LBNL	09-03 CERN	
	02-04 LBNL	03-04 LBNL	04-04 LBNL	05-04 CERN	06-04 LBNL	07-04 ETH	08-04 CERN	09-04 COLORADO	
	02-05 CBPF	03-05 OXFORD	04-05 CERN	05-05 CERN	06-05 CERN	07-05 ETH	08-05 UNM	09-05 COLORADO	10-05 ETH
01-06 CERN	02-06 CERN	03-06 CERN	04-06 LBNL	05-06 CERN	06-06 CERN	07-06 ETH	08-06 ETH	09-06 COLORADO	10-06 ETH
01-07 CERN	02-07 ETH	03-07 CERN	04-07 CBPF	05-07 CERN	06-07 CERN	07-07 ETH	08-07 CERN	09-07 COLORADO	10-07 CERN
01-08 OXFORD	02-08 LBNL	03-08 LBNL	04-08 LBNL	05-08 DEMOKRITOS	06-08 CERN	07-08 ETH	08-08 CERN	09-08 PURDUE	10-08 ETH
	02-09 CERN	03-09 LBNL	04-09 CERN	05-09 CERN	06-09 CERN	07-09 LBNL	08-09 LBNL	09-09 PURDUE	10-09 CERN
	02-10 LBNL	03-10 LBNL	04-10 CERN	05-10 DEMOKRITOS	06-10 ETH	07-10 OXFORD	08-10 LBNL	09-10 ETH	
		03-11 RBI	04-11 CERN	05-11 CERN	06-11 CERN	07-11 LBNL	08-11 CERN		
			04-12 CERN	05-12 CERN	06-12 CERN	07-12 CERN			

Serial Number	0x0355
Diced Location	IZM
Diced Date	2018-08-01 12:00:00
Thickness	350 nm
Bumped	False
Sensor	none;
Flip Date	2019-08-19 12:00:00
Board	324
Board Date	2018-11-14 12:00:00
Status History	2019-08-19 - All Good 2018-11-14 - Untested
Location History	2019-08-19 - CERN 2018-08-27 - CERN
Radiation (Mrad)	0
Chip Comment	CERN 186 CMS lab
Board Comment	
Board Type	1: Bonn SCC

Show Wafer Statistics
Download Database File
Other Wafers: 4 5 7 9 10 11 12 16 26 31 65 66 67 68 69 70 71
Search by Current Location: All Chips ANL BN Barcelona Bari Bergamo Bergen Birmingham CBPF CERN COLORADO CPPM CUA Colorado Demokritos Dortmund ETH FIRENZE Firenze Genova Glasgow Goettingen HAMBURG HPK Hamburg IFCA INPP ITAINNOVA IZM KANSAS KEK KIT KSU LAL LBNL LPNHE MI-BICOCCA MISSING MPI OKSU OSU OXFORD Osaka Oslo PAVIA PISA PURDUE RAL RBI SLAC Strasbourg Tokyo-Tech Torino UCSC UIC UNM UTK UW UZH WIGNER-U Wuppertal



Current Wafer: 257

				01-06 Unknown	01-07 LBNL	01-08 Unknown	01-09 Unknown						
			02-04 LBNL	02-05 LBNL	02-06 LBNL	02-07 LBNL	02-08 LBNL	02-09 LBNL	02-10 LBNL	02-11 Unknown			
		03-03 LBNL	03-04 LBNL	03-05 LBNL	03-06 LBNL	03-07 LBNL	03-08 LBNL	03-09 LBNL	03-10 LBNL	03-11 LBNL	03-12 Unknown		
	04-02 LBNL	04-03 LBNL	04-04 LBNL	04-05 LBNL	04-06 LBNL	04-07 LBNL	04-08 LBNL	04-09 LBNL	04-10 LBNL	04-11 LBNL	04-12 LBNL	04-13 Unknown	
	05-02 LBNL	05-03 LBNL	05-04 LBNL	05-05 LBNL	05-06 LBNL	05-07 LBNL	05-08 LBNL	05-09 LBNL	05-10 LBNL	05-11 LBNL	05-12 LBNL	05-13 Unknown	
	06-02 LBNL	06-03 LBNL	06-04 LBNL	06-05 LBNL	06-06 LBNL	06-07 LBNL	06-08 LBNL	06-09 LBNL	06-10 LBNL	06-11 LBNL	06-12 LBNL	06-13 LBNL	06-14 Unknown
07-01 LBNL	07-02 LBNL	07-03 LBNL	07-04 LBNL	07-05 LBNL	07-06 LBNL	07-07 LBNL	07-08 LBNL	07-09 LBNL	07-10 LBNL	07-11 LBNL	07-12 LBNL	07-13 LBNL	07-14 Unknown
	08-02 LBNL	08-03 LBNL	08-04 LBNL	08-05 LBNL	08-06 LBNL	08-07 LBNL	08-08 LBNL	08-09 LBNL	08-10 LBNL	08-11 LBNL	08-12 LBNL	08-13 LBNL	08-14 Unknown
	09-02 LBNL	09-03 LBNL	09-04 LBNL	09-05 LBNL	09-06 LBNL	09-07 LBNL	09-08 LBNL	09-09 LBNL	09-10 LBNL	09-11 LBNL	09-12 LBNL	09-13 LBNL	
	10-02 LBNL	10-03 LBNL	10-04 LBNL	10-05 LBNL	10-06 LBNL	10-07 LBNL	10-08 LBNL	10-09 LBNL	10-10 LBNL	10-11 LBNL	10-12 LBNL	10-13 Unknown	
		11-03 LBNL	11-04 LBNL	11-05 LBNL	11-06 LBNL	11-07 LBNL	11-08 LBNL	11-09 LBNL	11-10 LBNL	11-11 LBNL	11-12 LBNL		
			12-04 LBNL	12-05 LBNL	12-06 LBNL	12-07 LBNL	12-08 LBNL	12-09 LBNL	12-10 LBNL	12-11 LBNL			
					13-06 LBNL	13-07 LBNL	13-08 LBNL	13-09 LBNL					

Serial Number	0x10149
Diced Location	APD
Diced Date	None
Thickness	775 nm
Bumped	False
Sensor	None
Flip Date	None
Board	None
Board Date	None
Status History	2020-06-12 - Untested
Location History	2020-06-12 - CERN
Radiation (Mrad)	None
Chip Comment	None
Board Comment	None
Board Type	0: None

Show Wafer Statistics
Download Database File
Other Wafers: 290
Search by Current Location: All Chips LBNL

RD53B Flask website

A micro web framework written in Python.

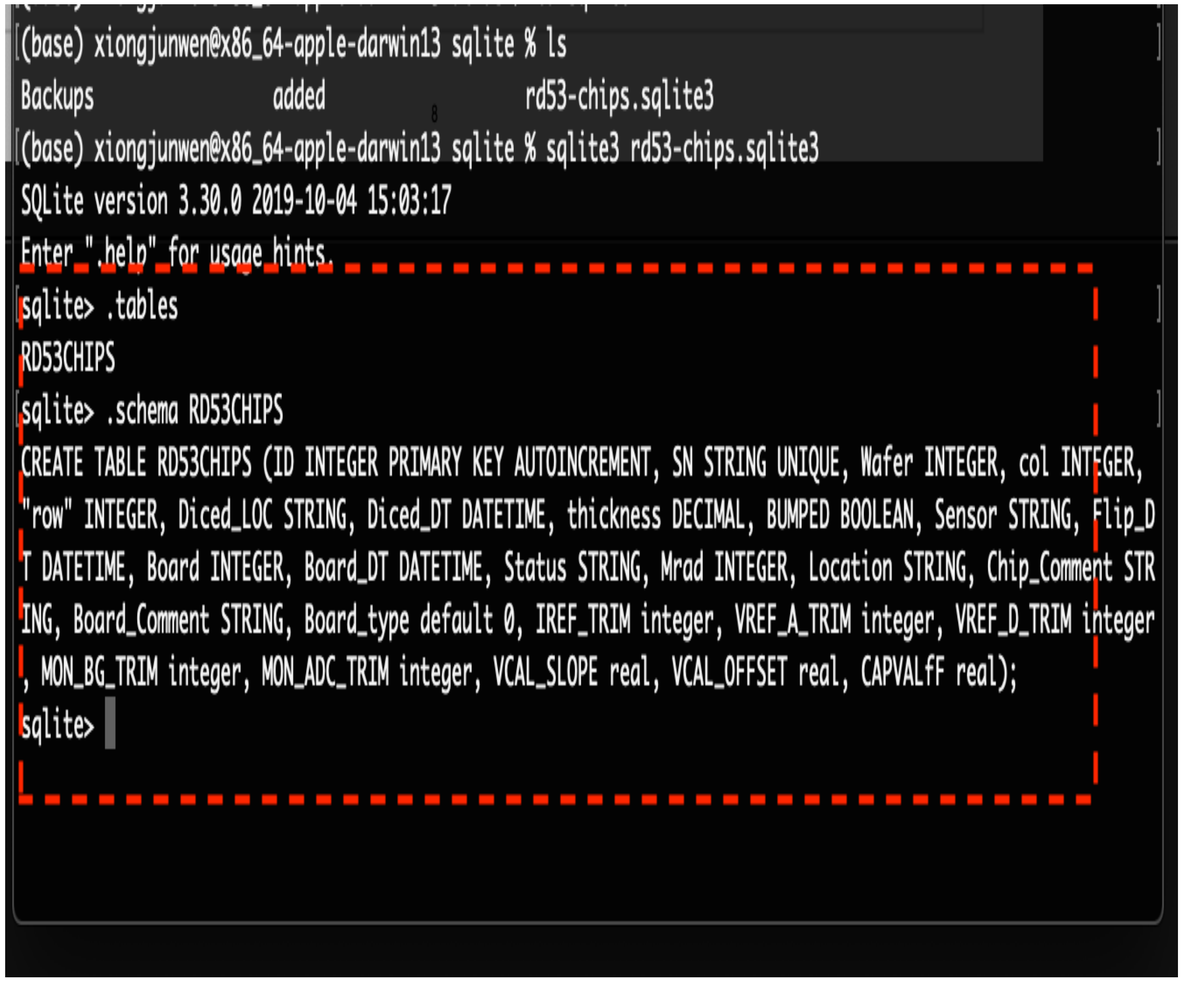
```
@app.route('/rd53b-chip/chip')
def rd53_chip_info():
    id=request.args.get("id")
    w=request.args.get('wafer')
    r=request.args.get('row')
    c=request.args.get('col')

    conn = sqlite3.connect('/Users/xiongjunwen/2019-2020summer/atlas/sqlite/rd53-chips.sqlite3')
    curr=conn.cursor()
    if id:
        curr.execute('select SN,Diced_LOC,Diced_DT,thickness,BUMPED,Sensor,Flip_DT,Board,Board_DT,Status,Mrad,Location,Chip_Comment,Board_Comment,Board_type from RD53CHIPS where SN=?',(id,))
    else:
        curr.execute('select SN,Diced_LOC,Diced_DT,thickness,BUMPED,Sensor,Flip_DT,Board,Board_DT,Status,Mrad,Location,Chip_Comment,Board_Comment,Board_type from RD53CHIPS where wafer=? and

    data=curr.fetchone()
    conn.close()

    info={}
    info['SN']=data[0]
    info['Diced_LOC']=data[1].upper()
    info['Diced_DT']=data[2]
    info['thickness']=str(data[3])+" nm"
    info['Bumped']=bool(data[4])
    info['Sensor']=data[5]
    info['Flip_DT']=data[6]
    info['Board']=data[7]
    info['Board_DT']=data[8]
    info['Radiation']=data[10]
    info['Chip_Comment']=data[12]
    info['Board_Comment']=data[13]
    info['Board_type']=board_type_map[data[14]]

    try:
        status=data[9]
        status_list=[]
        for entry in status.split('$'):
            if '@' in entry:
                status_list.append((entry.strip().split('@')[1],status_map[int(entry.strip().split('@')[0])]))
    except:
        status_list=[("Error","Couldn't parse data")]
    info['Status_List']=status_list

    try:
        locations=data[11]
        location_list=[]
        for entry in locations.split('$'):
            if '@' in entry:
                location_list.append((entry.strip().split('@')[1],entry.strip().split('@')[0].upper()))
    except:
        location_list=[("Error","Couldn't parse data")]
    info['Location_List']=location_list

    return render_template('chip.html',info=info)

@app.route('/rd53b-chip/stat')
def rd53_chip_stat():
    conn = sqlite3.connect('/Users/xiongjunwen/2019-2020summer/atlas/sqlite/rd53-chips.sqlite3')
```

Flask allows users

- To create a web page under the domain name assigned by the server.
  - e.g. rd53db.web.cern.ch/rd53db/rd53b-chip/
- To access sqlite3 database file
- To use a .html template

RD53B sqlite3 database

A database management system in C



In a .sqlite3 database file, we can:

- Access the chip information in the terminal
- Update the chip information, such as the chip location, the board that the chip is on, the status of the chip, etc through simple shell scripts.
- Access the chip information through python and present in a website!