UKSta18_Liang_Ex01

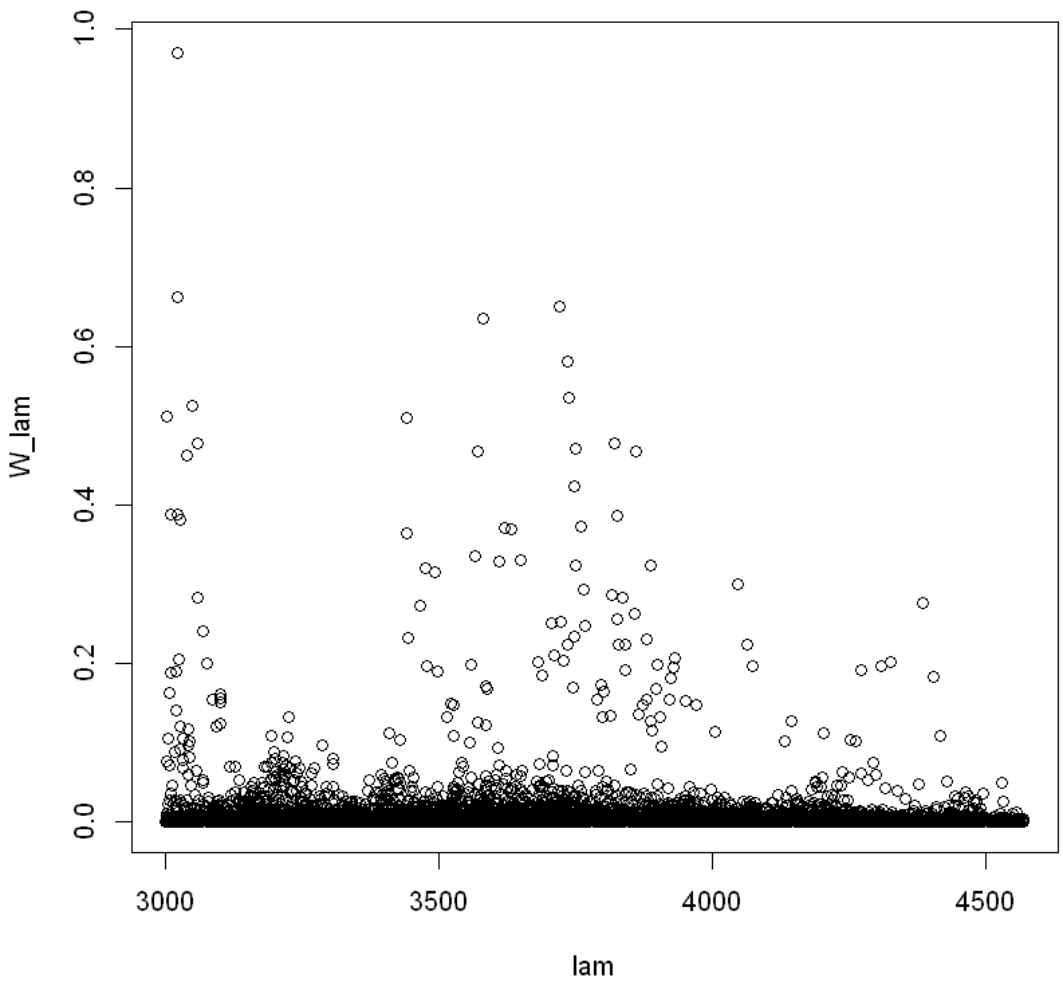
August 7, 2018

1 R exercise 03: strong Fe I lines

using the datafile "Fel_lines.txt"

First we compute W_lam and plot it against lam:

```
In [1]: data <- read.table("FeI_lines.txt", header = TRUE)
        attach(data)    # the colomns are then grouped by the header in the datafile
        W_lam <- exp(loggf - chi)
        plot(lam, W_lam)
```



Unfortunately the function locator(1) doesn't work in Juptyter notebook. So instead by working on R console, by clicking on the upper left point and the two upper points in the middle, we get the value of lam for the 3 strongest lines:

```
lam_1 = 3018.548, lam_2 = 3578.296, lam_3 = 3726.800
```

Anternatively we can also sort out the highest 4 values of W_lam, because the second maximum lies also on the first line. And then find the correspoding value of lam.

2 R exercise 05: control statements

We implement a function that prints out the first n(as argument of the function) prime numbers:

In [17]:
```
Prime <- function(n){
    if(n < 1)
        return("Invalid argument")
    result <- 2
    for (i in 3:(50*n)){
        if (any(i %% 2:(i/2) == 0))
            next
        result <- c(result, i)
        if (length(result) == n)
            return(result)
    }
}
# Test
print(Prime(100))
```

```
  [1]   2   3   5   7  11  13  17  19  23  29  31  37  41  43  47  53  59  61
 [19]  67  71  73  79  83  89  97 101 103 107 109 113 127 131 137 139 149 151
 [37] 157 163 167 173 179 181 191 193 197 199 211 223 227 229 233 239 241 251
 [55] 257 263 269 271 277 281 283 293 307 311 313 317 331 337 347 349 353 359
 [73] 367 373 379 383 389 397 401 409 419 421 431 433 439 443 449 457 461 463
 [91] 467 479 487 491 499 503 509 521 523 541
```