

BOHR

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simple atom representation according to the Bohr model

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English documentation

This package provides means for the creation of simple Bohr models of atoms up to the atomic number 112. Additionally commands are provided to convert atomic numbers to element symbols or element names and vice versa.

The package is inspired by a question on <http://tex.stackexchange.com/>: Draw Bohr atomic model with electron shells in TeX?

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1 Licence and Requirements

BOHR is placed under the terms of the LaTeX Project Public License, version 1.3 or later (<http://www.latex-project.org/lppl.txt>). It has the status “maintained.”

BOHR loads and needs the packages tikz,¹ pgfplots² and etoolbox.³

2 Options

Every option described in the manual can also be used as package option. Options are indicated as `option` and are all key/value like options. Some options can be set without value, too. Then

¹ CTAN: tikz ² CTAN: pgfplots ³ CTAN: etoolbox

the underlined value is used.

3 Usage

BOHR is used like any other $\text{\LaTeX 2}_{\epsilon}$ package:

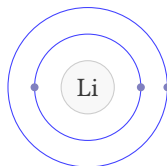
```
1 \usepackage{bohr}
```

The main command, `\bohr`, creates the models:

► `\bohr[<num of shells>]{<number of electrons>}{<atom name>}`

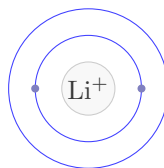
This is described best by an example:

```
1 \bohr{3}{Li}
```



There is not much more to it. Another example using the optional argument:

```
1 \bohr[2]{2}{\mathrm{Li^{+}}}
```



4 Customization

BOHR provides a handful of options to customize the appearance:

► `\setbohr{<options>}`

Options are set in a key/value syntax using this command.

► `insert-symbol = true|false`

Default: false

If set to true **BOHR** will insert the atomic symbol suiting to the given electron number if *no* third argument is given.

► `atom-style = <code>`

(initially empty)

This code will be placed immediatly before the third argument of `\bohr`. The last macro in it may need one argument.

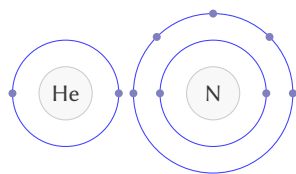
- ▶ `name-options-set` = <tikz> (initially empty)
This value is passed to the options of the `\node` the third argument of `\bohr` is placed in.
- ▶ `name-options-add` = <tikz> (initially empty)
This value will be added to options set with `name-options-set`.
- ▶ `nucleus-option-set` = <tikz> Default: `draw=black!80,fill=black!10,opacity=.25`
This value is passed to the options of the `\draw` command that draws the circle around the name-node.
- ▶ `nucleus-options-add` = <tikz> (initially empty)
This value will be added to options set with `nucleus-options-set`.
- ▶ `nucleus-radius` = <dim> Default: 1em
The radius of the circle around the name-node.
- ▶ `electron-options-set` = <tikz> Default: `blue!50!black!50`
This value is passed to the options of the `\fill` command that draws the electrons.
- ▶ `electron-options-add` = <tikz> (initially empty)
This value will be added to options set with `electron-options-set`.
- ▶ `electron-radius` = <dim> Default: 1.5pt
The radius of the circles that represent the electrons.
- ▶ `shell-options-set` = <tikz> Default: `draw=blue!75,thin`
This value is passed to the options of the `\draw` command that draws the circles that represent the shells.
- ▶ `shell-options-add` = <tikz> (initially empty)
This value will be added to options set with `shell-options-set`.
- ▶ `shell-dist` = <dim> Default: 1em
The distance between the nucleus and the first shell and between subsequent shells.
- ▶ `german` = `true|false` Default: `false`
If set to `true` the German names are defined (see section 5 to understand what I mean). They are also defined if you use `babel`⁴ and select language `german` or `ngerman` in the preamble. The same holds for `polyglossia`.⁵

```

1 \setbohr{name-options-set={font=\footnotesize\sffamily}}
2 \bohr{2}{He} \bohr{7}{N}

```

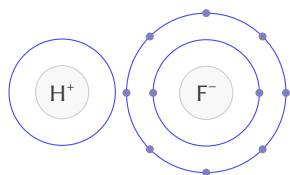
⁴ CTAN: [babel](#) ⁵ CTAN: [polyglossia](#)



```

1 % uses package 'chemmacros'
2 \setbohr{atom-style={\footnotesize\sffamily\ch}}
3 \bohr{0}{H+} \bohr{10}{F-}

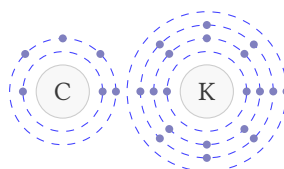
```



```

1 \setbohr{
2   shell-options-add = dashed,
3   shell-dist       = .5em,
4   insert-symbol
5 }
6 \bohr{6}{C} \bohr{19}{K}

```



5 Additional Commands

BOHR provides some additional commands that return the element symbol or the element name to a given atomic number and vice versa.

- ▶ `\elementsymbol{<atomic number>|<element name>}`
Returns the element symbol for a given atomic number or element name. `\elementsymbol{80}`: Hg; `\elementsymbol{rhenium}`: Rh.
- ▶ `\elementname{<atomic number>|<element symbol>}`
Returns the element name for a given atomic number or element symbol. `\elementname{80}`: Mercury; `\elementname{Rh}`: Rhenium.
- ▶ `\atomicnumber{<element name>|<element symbol>}`
Returns the atomic number for a given element name or element symbol. `\atomicnumber{Hg}`: 80; `\atomicnumber{rhenium}` 75.
- ▶ `\Z`
If this command isn't defined by some other package it is available as an alias of `\atomicnumber`.

```

1 The elements \elementname{F}, \elementname{Cl}, \elementname{Br},
2 \elementname{I} and \elementname{At} are called \emph{halogens}.

```

The elements Fluorine, Chlorine, Bromine, Iodine and Astatine are called *halogens*.

6 Implementation

```

1 % -----
2 % the BOHR package
3 %
4 %   simple atom representation according to the Bohr model
5 %
6 % -----
7 % Clemens Niederberger
8 % Web:   https://bitbucket.org/cgnieder/bohr/
9 % E-Mail: contact@mychemistry.eu
10 % -----
11 % Copyright 2011-2012 Clemens Niederberger
12 %
13 % This work may be distributed and/or modified under the
14 % conditions of the LaTeX Project Public License, either version 1.3
15 % of this license or (at your option) any later version.
16 % The latest version of this license is in
17 %   http://www.latex-project.org/lppl.txt
18 % and version 1.3 or later is part of all distributions of LaTeX
19 % version 2005/12/01 or later.
20 %
21 % This work has the LPPL maintenance status ‘maintained’.
22 %
23 % The Current Maintainer of this work is Clemens Niederberger.
24 % -----
25 % The bohr package consists of the files
26 % - bohr.sty
27 % - bohr_en.tex, bohr_en.pdf
28 % - bohr_elements_english.def, bohr_elements_german.def
29 % - README
30 % -----
31 % If you have any ideas, questions, suggestions or bugs to report, please
32 % feel free to contact me.
33 % -----
34 \def\@bohr@date{2012/09/22}

```

```

35 \def\@bohr@version{0.2}
36 \def\@bohr@description{simple atom representation according to the Bohr
    model}
37
38 \ProvidesPackage{bohr}[\@bohr@date\space \@bohr@version\space \
    \@bohr@description]
39 \RequirePackage{tikz,etoolbox,pgfopts}
40
41 % -----
42 % message handling
43 \def\@bohr@create@message#1{%
44     \ifstrequal{#1}{Error}
45     {%
46         \lowercase{\csdef{\@bohr@#1}}##1##2{%
47             \csuse{Package#1}{bohr}{##1}{##2}}%
48     }{%
49         \lowercase{\csdef{\@bohr@#1}}##1{%
50             \csuse{Package#1}{bohr}{##1}}%
51     }}
52 \@bohr@create@message{Error}
53 \@bohr@create@message{Warning}
54 \@bohr@create@message{WarningNoLine}
55 \@bohr@create@message{Info}
56
57 % -----
58 % the \bohr command
59 % optional #1: number of shells
60 % #2: number of electrons
61 % #3: atom name
62 \newrobustcmd*{\bohr}[3][\@bohr{#1}{#2}{#3}]
63
64 \def\@bohr#1#2#3{%
65     \ifblank{#2}
66     {%
67         \@bohr@error{You must specify an electron number, possibly 0.}
68         {You must specify an electron number, possibly 0.}%
69     }{%
70         \ifnum#2<0\relax
71         \@bohr@error{The electron number cannot be negative!}
72         {The electron number cannot be negative!}%
73         \fi
74     }%
75     \ifblank{#1}
76     {\@bohr@get@shell@num{#2}}
77     {
78         \@bohr@get@shell@num{#2}%
79         \ifnum#1<\@bohr@shell@num

```

```

80         \@bohr@warning{The shell number you provided (#1) is too small for
the
81         electron number you provided (#2)! I'll use \@bohr@shell@num\
space shells.}%
82     \else
83         \ifnum#1>7\relax
84         \@bohr@warning{I know only of 7 electron shells. You gave me #1
so I'll
85         be using 7 instead.}
86         \def\@bohr@shell@num{7}%
87     \else
88         \def\@bohr@shell@num{#1}%
89     \fi
90 \fi
91 }%
92 \tikzpicture[baseline=(nucleus.base)]
93     \expandafter\node\expandafter[\@bohr@name@options]
94     (nucleus) at (0,0) {\@bohr@insert@symbol{#2}{#3}} ;
95     \expandafter\draw\expandafter[\@bohr@nucleus@options]
96     (nucleus) circle (\@bohr@nucleus@radius) ;
97     \foreach\@bohr@current@shell@num in {1,...,\@bohr@shell@num}
98     {
99         \expandafter\draw\expandafter[\@bohr@shell@options]
100         (nucleus) circle (\@bohr@nucleus@radius+\@bohr@current@shell@num*\
\@bohr@shell@dist) ;
101     }
102     \@bohr@draw@electrons{#2}
103 \endtikzpicture
104 }
105
106 \def\@bohr@get@shell@num#1{%
107     \ifnum#1<3\relax
108         \def\@bohr@shell@num{1}%
109     \else
110         \ifnum#1<11\relax
111             \def\@bohr@shell@num{2}%
112         \else
113             \ifnum#1<19\relax
114                 \def\@bohr@shell@num{3}%
115             \else
116                 \ifnum#1<37\relax
117                     \def\@bohr@shell@num{4}%
118                 \else
119                     \ifnum#1<55\relax
120                         \def\@bohr@shell@num{5}%
121                     \else
122                         \ifnum#1<87\relax
123                             \def\@bohr@shell@num{6}%
124                         \else

```

```

125         \ifnum#1<110\relax
126         \def\@bohr@shell@num{7}%
127     \else
128         \def\@bohr@shell@num{112}%
129         \@bohr@warning{I only know atoms up to 112 (Copernicium).

You
130         gave me #1 so I am using 112 instead.}
131     \fi
132 \fi
133 \fi
134 \fi
135 \fi
136 \fi
137 \fi
138 }
139
140 \def\@bohr@distributed@electrons#1#2#3#4{%
141     \pgfmathparse{#2}%
142     \let\@bohr@last@electron\pgfmathresult
143     \foreach\@bohr@electron@number in {#1,...,\@bohr@last@electron}
144     {
145         \expandafter\fill\expandafter[\@bohr@electron@options] (nucleus)
146         ++(#3*\@bohr@electron@number-#3:\@bohr@nucleus@radius+#4*\
147         \@bohr@shell@dist)
148         circle (\@bohr@electron@radius) ;
149     }
150 }
151 \def\@bohr@draw@electrons#1{%
152     \ifnum#1<1\relax\else
153         \ifnum#1<3\relax
154             \@bohr@distributed@electrons{1}{#1}{180}{1}%
155         \else
156             \ifnum#1<11\relax
157                 \@bohr@distributed@electrons{1}{2}{180}{1}%
158                 \@bohr@distributed@electrons{1}{#1-2}{45}{2}%
159             \else
160                 \ifnum#1<19\relax
161                     \@bohr@distributed@electrons{1}{2}{180}{1}%
162                     \@bohr@distributed@electrons{1}{8}{45}{2}%
163                     \@bohr@distributed@electrons{1}{#1-10}{45}{3}%
164                 \else
165                     \ifnum#1<37\relax
166                         \@bohr@distributed@electrons{1}{2}{180}{1}%
167                         \@bohr@distributed@electrons{1}{8}{45}{2}%
168                         \@bohr@distributed@electrons{1}{8}{45}{3}%
169                         \@bohr@distributed@electrons{1}{#1-18}{20}{4}%
170                     \else
171                         \ifnum#1<55\relax

```



```

172         \@bohr@distributed@electrons{1}{2}{180}{1}%
173         \@bohr@distributed@electrons{1}{8}{45}{2}%
174         \@bohr@distributed@electrons{1}{8}{45}{3}%
175         \@bohr@distributed@electrons{1}{18}{20}{4}%
176         \@bohr@distributed@electrons{1}{#1-36}{20}{5}%
177     \else
178         \ifnum#1<87\relax
179             \@bohr@distributed@electrons{1}{2}{180}{1}%
180             \@bohr@distributed@electrons{1}{8}{45}{2}%
181             \@bohr@distributed@electrons{1}{8}{45}{3}%
182             \@bohr@distributed@electrons{1}{18}{20}{4}%
183             \@bohr@distributed@electrons{1}{18}{20}{5}%
184             \@bohr@distributed@electrons{1}{#1-54}{11.25}{6}%
185         \else
186             \ifnum#1<113\relax
187                 \@bohr@distributed@electrons{1}{2}{180}{1}%
188                 \@bohr@distributed@electrons{1}{8}{45}{2}%
189                 \@bohr@distributed@electrons{1}{8}{45}{3}%
190                 \@bohr@distributed@electrons{1}{18}{20}{4}%
191                 \@bohr@distributed@electrons{1}{18}{20}{5}%
192                 \@bohr@distributed@electrons{1}{32}{11.25}{6}%
193                 \@bohr@distributed@electrons{1}{#1-86}{11.25}{7}%
194             \fi
195         \fi
196     \fi
197 \fi
198 \fi
199 \fi
200 \fi
201 \fi
202 }
203
204 % -----
205
206 % atomic numbers and element symbols and names
207 \def\@bohr@define@atom@symbol#1#2{%
208     \csdef{\@bohr@atom@symbol@num@romannumeral#1}{#2}%
209     \lowercase{\csdef{\@bohr@atom@number@#2}}{#1}}
210 \def\@bohr@define@atom@name#1#2{%
211     \csdef{\@bohr@atom@name@romannumeral#1}{#2}%
212     \lowercase{\csdef{\@bohr@atom@name@num@#2}}{#1}}
213
214 \newrobustcmd*{\DeclareAtomName[2]}{%
215     \@bohr@define@atom@name{#1}{#2}}
216 \newrobustcmd*{\DeclareAtomSymbol[2]}{%
217     \@bohr@define@atom@symbol{#1}{#2}}
218
219 \def\@bohr@get@atom@symbol#1{%
220     \csuse{\@bohr@atom@symbol@num@romannumeral#1}}

```

```

220 \def\@bohr@get@atom@number#1{%
221   \lowercase{\csuse{\@bohr@atom@number@#1}}
222 \def\@bohr@get@atom@name#1{%
223   \csuse{\@bohr@atom@name@\romannumeral#1}}
224
225 \def\@bohr@element@symbol#1{%
226   \lowercase{\ifcsdef{\@bohr@atom@name@num@#1}}
227     {\lowercase{\@bohr@get@atom@symbol{\csuse{\@bohr@atom@name@num@#1}}}}
228     {\@bohr@get@atom@symbol{#1}}}
229
230 \def\@bohr@atomic@number#1{%
231   \lowercase{\ifcsdef{\@bohr@atom@number@#1}}
232     {\@bohr@get@atom@number{#1}}
233     {\lowercase{\csuse{\@bohr@atom@name@num@#1}}}}
234 \ifdef\Z{}\let\Z\atomicnumber}
235
236 \def\@bohr@elemt@symbol#1{%
237   \if!\ifnum9<1#1!\@bohr@get@atom@name{#1}\fi
238   \else
239     \lowercase{\@bohr@get@atom@name{\csuse{\@bohr@atom@number@#1}}}%
240   \fi}
241
242 \newrobustcmd*{\elementsymbol[1]{\@bohr@element@symbol{#1}}}
243 \newrobustcmd*{\atomicnumber[1]{\@bohr@atomic@number{#1}}}
244 \newrobustcmd*{\elementname[1]{\@bohr@elemt@symbol{#1}}}
245
246 \DeclareAtomSymbol{1}{H}
247 \DeclareAtomSymbol{2}{He}
248 \DeclareAtomSymbol{3}{Li}
249 \DeclareAtomSymbol{4}{Be}
250 \DeclareAtomSymbol{5}{B}
251 \DeclareAtomSymbol{6}{C}
252 \DeclareAtomSymbol{7}{N}
253 \DeclareAtomSymbol{8}{O}
254 \DeclareAtomSymbol{9}{F}
255 \DeclareAtomSymbol{10}{Ne}
256 \DeclareAtomSymbol{11}{Na}
257 \DeclareAtomSymbol{12}{Mg}
258 \DeclareAtomSymbol{13}{Al}
259 \DeclareAtomSymbol{14}{Si}
260 \DeclareAtomSymbol{15}{P}
261 \DeclareAtomSymbol{16}{S}
262 \DeclareAtomSymbol{17}{Cl}
263 \DeclareAtomSymbol{18}{Ar}
264 \DeclareAtomSymbol{19}{K}
265 \DeclareAtomSymbol{20}{Ca}
266 \DeclareAtomSymbol{21}{Sc}
267 \DeclareAtomSymbol{22}{Ti}
268 \DeclareAtomSymbol{23}{V}

```

```

269 \DeclareAtomSymbol{24}{Cr}
270 \DeclareAtomSymbol{25}{Mn}
271 \DeclareAtomSymbol{26}{Fe}
272 \DeclareAtomSymbol{27}{Co}
273 \DeclareAtomSymbol{28}{Ni}
274 \DeclareAtomSymbol{29}{Cu}
275 \DeclareAtomSymbol{30}{Zn}
276 \DeclareAtomSymbol{31}{Ga}
277 \DeclareAtomSymbol{32}{Ge}
278 \DeclareAtomSymbol{33}{As}
279 \DeclareAtomSymbol{34}{Se}
280 \DeclareAtomSymbol{35}{Br}
281 \DeclareAtomSymbol{36}{Kr}
282 \DeclareAtomSymbol{37}{Rb}
283 \DeclareAtomSymbol{38}{Sr}
284 \DeclareAtomSymbol{39}{Y}
285 \DeclareAtomSymbol{40}{Zr}
286 \DeclareAtomSymbol{41}{Nb}
287 \DeclareAtomSymbol{42}{Mo}
288 \DeclareAtomSymbol{43}{Tc}
289 \DeclareAtomSymbol{44}{Ru}
290 \DeclareAtomSymbol{45}{Rh}
291 \DeclareAtomSymbol{46}{Pd}
292 \DeclareAtomSymbol{47}{Ag}
293 \DeclareAtomSymbol{48}{Cd}
294 \DeclareAtomSymbol{49}{In}
295 \DeclareAtomSymbol{50}{Sn}
296 \DeclareAtomSymbol{51}{Sb}
297 \DeclareAtomSymbol{52}{Te}
298 \DeclareAtomSymbol{53}{I}
299 \DeclareAtomSymbol{54}{Xe}
300 \DeclareAtomSymbol{55}{Cs}
301 \DeclareAtomSymbol{56}{Ba}
302 \DeclareAtomSymbol{57}{La}
303 \DeclareAtomSymbol{58}{Ce}
304 \DeclareAtomSymbol{59}{Pr}
305 \DeclareAtomSymbol{60}{Nd}
306 \DeclareAtomSymbol{61}{Pm}
307 \DeclareAtomSymbol{62}{Sm}
308 \DeclareAtomSymbol{63}{Eu}
309 \DeclareAtomSymbol{64}{Gd}
310 \DeclareAtomSymbol{65}{Tb}
311 \DeclareAtomSymbol{66}{Dy}
312 \DeclareAtomSymbol{67}{Ho}
313 \DeclareAtomSymbol{68}{Er}
314 \DeclareAtomSymbol{69}{Tm}
315 \DeclareAtomSymbol{70}{Yb}
316 \DeclareAtomSymbol{71}{Lu}
317 \DeclareAtomSymbol{72}{Hf}

```

```

318 \DeclareAtomSymbol{73}{Ta}
319 \DeclareAtomSymbol{74}{W}
320 \DeclareAtomSymbol{75}{Rh}
321 \DeclareAtomSymbol{76}{Os}
322 \DeclareAtomSymbol{77}{Ir}
323 \DeclareAtomSymbol{78}{Pt}
324 \DeclareAtomSymbol{79}{Au}
325 \DeclareAtomSymbol{80}{Hg}
326 \DeclareAtomSymbol{81}{Tl}
327 \DeclareAtomSymbol{82}{Pb}
328 \DeclareAtomSymbol{83}{Bi}
329 \DeclareAtomSymbol{84}{Po}
330 \DeclareAtomSymbol{85}{At}
331 \DeclareAtomSymbol{86}{Rn}
332 \DeclareAtomSymbol{87}{Fr}
333 \DeclareAtomSymbol{88}{Ra}
334 \DeclareAtomSymbol{89}{Ac}
335 \DeclareAtomSymbol{90}{Th}
336 \DeclareAtomSymbol{91}{Pa}
337 \DeclareAtomSymbol{92}{U}
338 \DeclareAtomSymbol{93}{Np}
339 \DeclareAtomSymbol{94}{Pu}
340 \DeclareAtomSymbol{95}{Am}
341 \DeclareAtomSymbol{96}{Cm}
342 \DeclareAtomSymbol{97}{Bk}
343 \DeclareAtomSymbol{98}{Cf}
344 \DeclareAtomSymbol{99}{Es}
345 \DeclareAtomSymbol{100}{Fm}
346 \DeclareAtomSymbol{101}{Md}
347 \DeclareAtomSymbol{102}{No}
348 \DeclareAtomSymbol{103}{Lr}
349 \DeclareAtomSymbol{104}{Rf}
350 \DeclareAtomSymbol{105}{Db}
351 \DeclareAtomSymbol{106}{Sg}
352 \DeclareAtomSymbol{107}{Bh}
353 \DeclareAtomSymbol{108}{Hs}
354 \DeclareAtomSymbol{109}{Mt}
355 \DeclareAtomSymbol{110}{Ds}
356 \DeclareAtomSymbol{111}{Rg}
357 \DeclareAtomSymbol{112}{Cn}
358
359 % element names are defined in bohr_elements_english.def or
360 % bohr_elements_german.def, respectively. Now we need to decide
361 % which ones we want
362 \AfterEndPreamble{
363 \ifdef\bbl@afterfi{}\long\def\bbl@afterfi#1{\fi#1}}
364 \ifboolexpr
365 {
366 test {\iflanguage{german}} or

```

```

367     test {\iflanguage{ngerman}}
368   }
369   {\booltrue{bohr@german}}{}
370 \ifbool{bohr@german}
371   {\input{bohr_elements_german.def}}
372   {\input{bohr_elements_english.def}}
373 }
374
375
376 % -----
377
377 % options
378 \def\@bohr@name@options{}
379 \def\@bohr@write@atom#1{#1}
380 \def\@bohr@nucleus@radius{1em}
381 \def\@bohr@electron@options{blue!50!black!50}
382 \def\@bohr@electron@radius{1.5pt}
383 \def\@bohr@shell@dist{1em}
384 \def\@bohr@nucleus@options{draw=black!80,fill=black!10,opacity=.25}
385 \def\@bohr@shell@options{draw=blue!75,thin}
386
387 \newbool{bohr@insert@symbol}
388 \newbool{bohr@german}
389
390 \def\@bohr@insert@symbol#1#2{%
391   \ifbool{bohr@insert@symbol}
392     {\ifblank{#2}{\@bohr@get@atom@symbol{#1}}{\@bohr@write@atom{#2}}}
393     {\@bohr@write@atom{#2}}
394
395 \pgfkeys{
396   bohr/.cd,
397   insert-symbol/.is if      = bohr@insert@symbol ,
398   atom-style/.code          = \def\@bohr@write@atom{#1} ,
399   name-options-set/.code    = \def\@bohr@name@options{#1} ,
400   name-options-add/.code    =
401     \expandafter\def\expandafter\@bohr@name@options\expandafter{\
402     \@bohr@name@options,#1} ,
403   nucleus-radius/.code      = \def\@bohr@nucleus@radius{#1} ,
404   nucleus-options-set/.code = \def\@bohr@nucleus@options{#1} ,
405   nucleus-options-add/.code =
406     \expandafter\def\expandafter\@bohr@nucleus@options\expandafter{\
407     \@bohr@nucleus@options,#1} ,
408   electron-radius/.code     = \def\@bohr@electron@radius{#1} ,
409   electron-options-set/.code = \def\@bohr@electron@options{#1} ,
410   electron-options-add/.code =
411     \expandafter\def\expandafter\@bohr@electron@options\expandafter{\
412     \@bohr@electron@options,#1} ,
413   shell-dist/.code          = \def\@bohr@shell@dist{#1} ,
414   shell-options-set/.code   = \def\@bohr@shell@options{#1} ,

```

```

412     shell-options-add/.code      =
413     \expandafter\def\expandafter\@bohr@shell@options\expandafter{\
@bohr@shell@options,#1} ,
414     german/.is if                = bohr@german ,
415     ngerman/.is if               = bohr@german
416 }
417
418 \newrobustcmd\setbohr[1]{\pgfqkeys{/bohr}{#1}}
419
420 \ProcessPgfOptions*
421 \endinput
422
423 % HISTORY
424 2012/09/21 v0.1a - first version on bitbucket
425 2012/09/22 v0.2  - added compatibility up to atomic number 112
426                  - added the commands \elementname and \elementsymbol with
427                  language support German and English
428                  - improved error checking

```

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