













h<sup>2</sup>



2m









$R_{nl}(r)$

$r$









$$\frac{d^2 R_{nl}(r)}{dr^2}$$







1

---

$\sin \theta$

2

—

20



$$\frac{\partial Y_{lm}(\hat{\mathbf{r}})}{\partial \theta}$$

$$\partial \theta$$



1

---

$\sin^2 \theta$



$$\partial^2 Y_{lm}(\hat{\mathbf{r}})$$


---

$$\partial\phi^2$$













$$\frac{l(l+1)}{r^2}$$















πλ

$$R_{nl}^2(r)$$

---


$$4\pi r^2$$





or



or

24



20

1



$r \sin \theta$

24



24



$d^2$



$d^2$

1



$r^2 \sin \theta$







1



$r^2 \sin^2 \theta$

$\partial^2 \psi$



$\partial \phi^2$

























mlj

$$R_{nlj}^2(r) + S_{nlj}^2(r)$$


---

$$4\pi r^2$$













$$\alpha^2$$



$$4M(r)$$

$$dV(r)$$

---

$$dr$$



$$dR_{nl}(r)$$

---

$$dr$$





Q2

---

4



$$df(r)$$



$$dr$$

$$df(x)$$



$$dx$$

$$d^2 f(r)$$

---


$$dr^2$$



$$d^2 f(x)$$

---

$$dx^2$$







$$\frac{d^2 R_{nl}(x)}{dx^2}$$

$$dP_m(x)$$

---

$$dx$$







$$\frac{l\sqrt{l^2-a^2z^2}+(l+1)\sqrt{(l+1)^2-a^2z^2}}{2l+1}$$



$$\sqrt{\frac{l(l+1)}{r^2} + (V(r) - \epsilon)}$$

$$dR_m(r_t^+)$$


---

$$dr$$

$$dR_m(r_t^-)$$


---

$$dr$$

$$d^2 \tilde{R}_{nl}(r)$$


---

$$dr^2$$

A



$R_{nl}(r_t)$



$r < r_c$

$$d^n R^{ps}(r_c)$$


---

$$dr^n$$

$$d^n R(r_c)$$


---

$$dr^n$$



$$\frac{R(r_c)}{r_c^{l+1}}$$

$$dR^{ps}(r)$$


---

$$dr$$

1

+

1

---

2

$$dR(r_c)$$

---

$$dr$$

1



$R_{ps}(r_c)$

1

+

1

---

$r_c$

$$d^2 R_{ps}(r)$$


---

$$d^2 r$$













$$2(l+1)$$

---

$$r$$



$$\frac{d^2 R_{ps}(r)}{dr^2}$$





270



72







$$\frac{l + 1}{r_c^2}$$

$$\frac{l + 1}{r^3 c}$$









1



$R_{ps}(r)$























