Long (long long long long long long) title

Ivan Toftul, Your Colleagues, ...

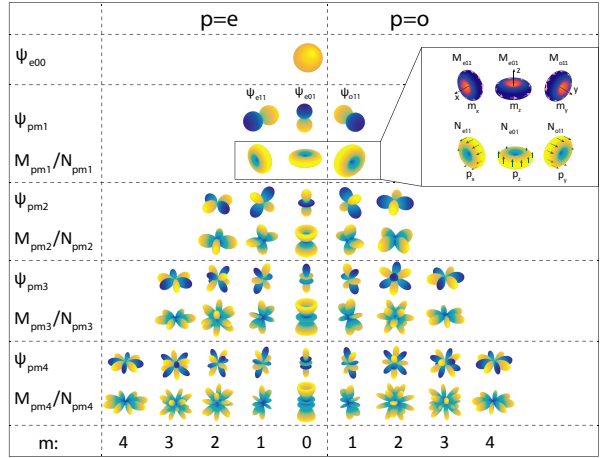
Faculty of Physics, ITMO University

toftul.ivan@gmail.com

August 30, 2022
EVENT @ PLACE

Introduction

- Don't forget to cite everything, that you haven't done by youself
- Если картинку рисовали не вы, должна быть ссылка
- Пример QR-кода



Source: S. Gladyshev *et al.*, *Phys. Rev. B* **105**, L241301, (https://doi.org/10.1103/PhysRevB.105.L241301) (2022)

Relevance of the work

- One
- Two
- Three

Figure: Nice Utia

Source: *@utia.me Instagram*, 2022, (https://www.instagram.com/utia.me)

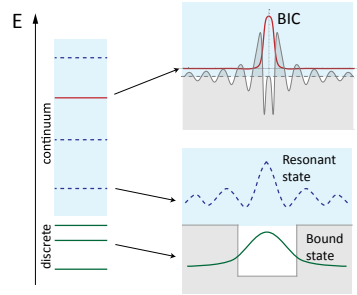


Figure: BIC Illustration

Source: *Bound state in the continuum - Wikipedia*, 2022, (https://en.wikipedia.org/w/index.php?title=Bound_state_in_the_continuum)

Постановка задачи

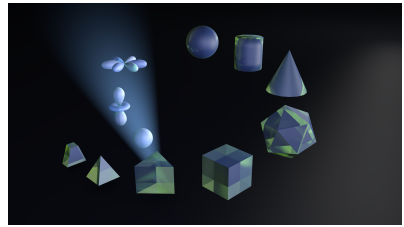


Figure: Схема установки/иллюстрация основной идеи/геометрия задачи[1]

Какой-то текст, или, например, формула $\int\limits_{-\infty}^{\infty} e^{-x^2}\mathrm{d}x = \sqrt{\pi}$

[1] ***Irreps in physics***, 2020, (https://www.youtube.com/playlist?list=PLIWWD4hFxKhNskgbCSjG9m877_u2hy23f).

First slide with results

From[2] we have

$$\sin(x) \approx x$$

Example

For $x = 0.1$ we have

$$\sin(0.1) = 0.09983341664682815$$

[2] M. E. Muldoon, A. A. Ungar, *Math. Mag.* **69**, 3–14 (Feb. 1996).

Second slide with results

- One
- Two
- Three

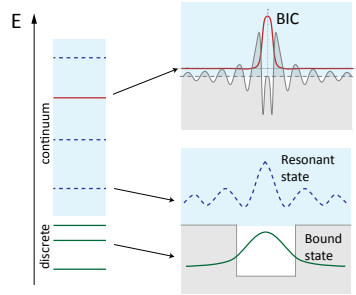


Figure: BIC Illustration

Source: ***Bound state in the continuum - Wikipedia***, 2022, (https://en.wikipedia.org/w/index.php?title=Bound_state_in_the_continuum)

Conclusions

1. One
2. Two

References

1. S. Gladyshev, A. Shalev, K. Frizyuk, K. Ladutenko, A. Bogdanov, *Phys. Rev. B* **105**, L241301, ISSN: 2469-9969, (https://doi.org/10.1103/PhysRevB.105.L241301) (2022).
2. *@utia.me Instagram*, [Online; accessed 29. Aug. 2022], 2022, (https://www.instagram.com/utia.me).
3. *Bound state in the continuum - Wikipedia*, [Online; accessed 29. Aug. 2022], 2022, (https://en.wikipedia.org/w/index.php?title=Bound_state_in_the_continuum).
4. *Irreps in physics*, [Online; accessed 29. Aug. 2022], 2020, (https://www.youtube.com/playlist?list=PLIWWD4hFxKhNskgbCSjG9m877_u2hy23f).
5. M. E. Muldoon, A. A. Ungar, *Math. Mag.* **69**, 3–14, ISSN: 0025-570X (Feb. 1996).

$\hat{\chi}^{(2)}_{\text{2D TMDC}}$ tensor in cylindrical coordinates

$$\chi^{(2)}_{\{\ell nm\}_{\text{cyl}}} = R^{-1}_{\ell i} R^{-1}_{nj} R^{-1}_{mk} \chi^{(2)}_{\{ijk\}_{\text{cart}}}, \qquad R^{-1}(\varphi) = \begin{pmatrix} \cos(\varphi) & \sin(\varphi) & 0 \\ -\sin(\varphi) & \cos(\varphi) & 0 \\ 0 & 0 & 1 \end{pmatrix}$$

$$\chi^{(2)}_{\text{2D TMDC}} = \tilde{\chi}^{\text{TMDC}}_{\text{2D}} \left[\begin{bmatrix} 0 & -1 & 0 \\ -1 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix} \begin{bmatrix} -1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 0 \end{bmatrix} \begin{bmatrix} 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix} \right]_{(\hat{\mathbf{x}},\hat{\mathbf{y}},\hat{\mathbf{z}})}$$

$$= \tilde{\chi}^{\text{TMDC}}_{\text{2D}} \left[\begin{bmatrix} -\sin(3\varphi) & -\cos(3\varphi) & 0 \\ -\cos(3\varphi) & \sin(3\varphi) & 0 \\ 0 & 0 & 0 \end{bmatrix} \begin{bmatrix} -\cos(3\varphi) & \sin(3\varphi) & 0 \\ \sin(3\varphi) & \cos(3\varphi) & 0 \\ 0 & 0 & 0 \end{bmatrix} \begin{bmatrix} 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix} \right]_{(\hat{\mathbf{r}},\hat{\boldsymbol{\varphi}},\hat{\mathbf{z}})}$$

$$= \tilde{\chi}^{\text{TMDC}}_{\text{2D}} \Big[\frac{1}{2} e^{-3i\varphi} \left(\hat{\varphi}\hat{\varphi}\hat{\varphi} + i\hat{\varphi}\hat{\varphi}\hat{r} + i\hat{\varphi}\hat{r}\hat{\varphi} - \hat{\varphi}\hat{r}\hat{r} + i\hat{r}\hat{\varphi}\hat{\varphi} - \hat{r}\hat{\varphi}\hat{r} - \hat{r}\hat{r}\hat{\varphi} - i\hat{r}\hat{r}\hat{r} \right)$$
$$+ \frac{1}{2} e^{+3i\varphi} \left(\hat{\varphi}\hat{\varphi}\hat{\varphi} - i\hat{\varphi}\hat{\varphi}\hat{r} - i\hat{\varphi}\hat{r}\hat{\varphi} - \hat{\varphi}\hat{r}\hat{r} - i\hat{r}\hat{\varphi}\hat{\varphi} - \hat{r}\hat{\varphi}\hat{r} - \hat{r}\hat{r}\hat{\varphi} + i\hat{r}\hat{r}\hat{r} \right) \Big]$$