

О законах Кеплера

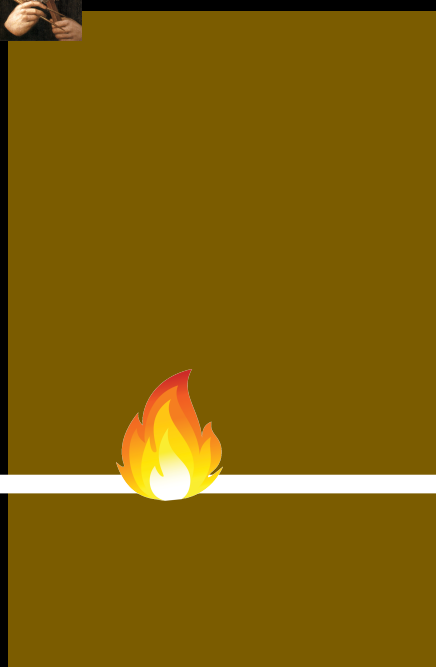


Иоганн Кеплер



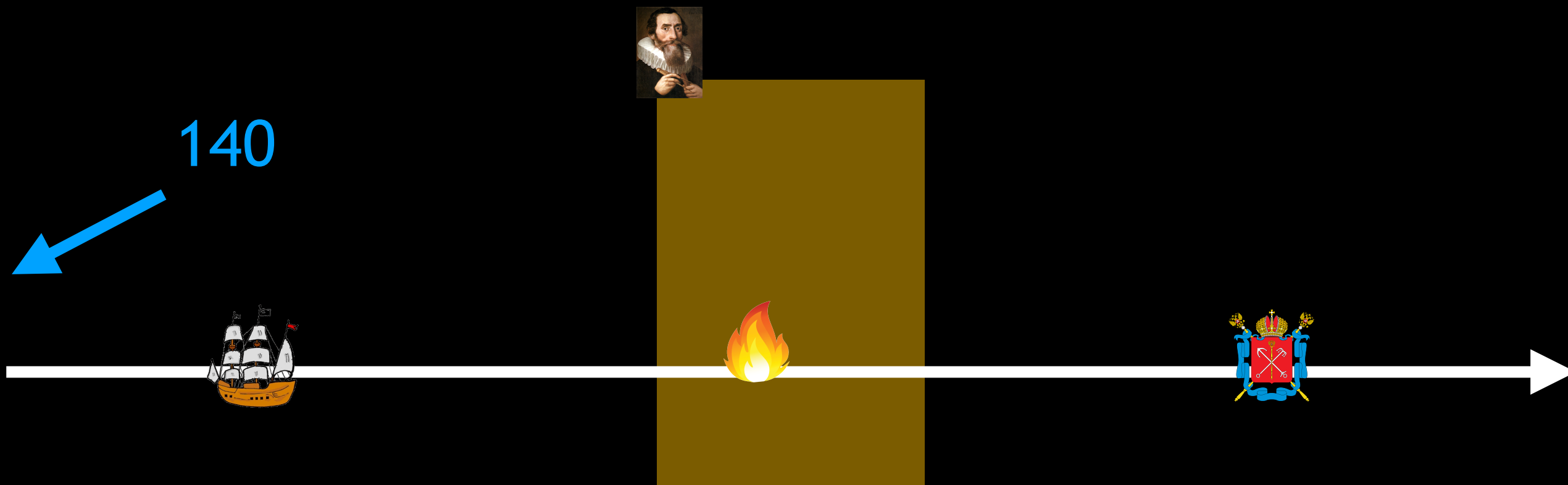


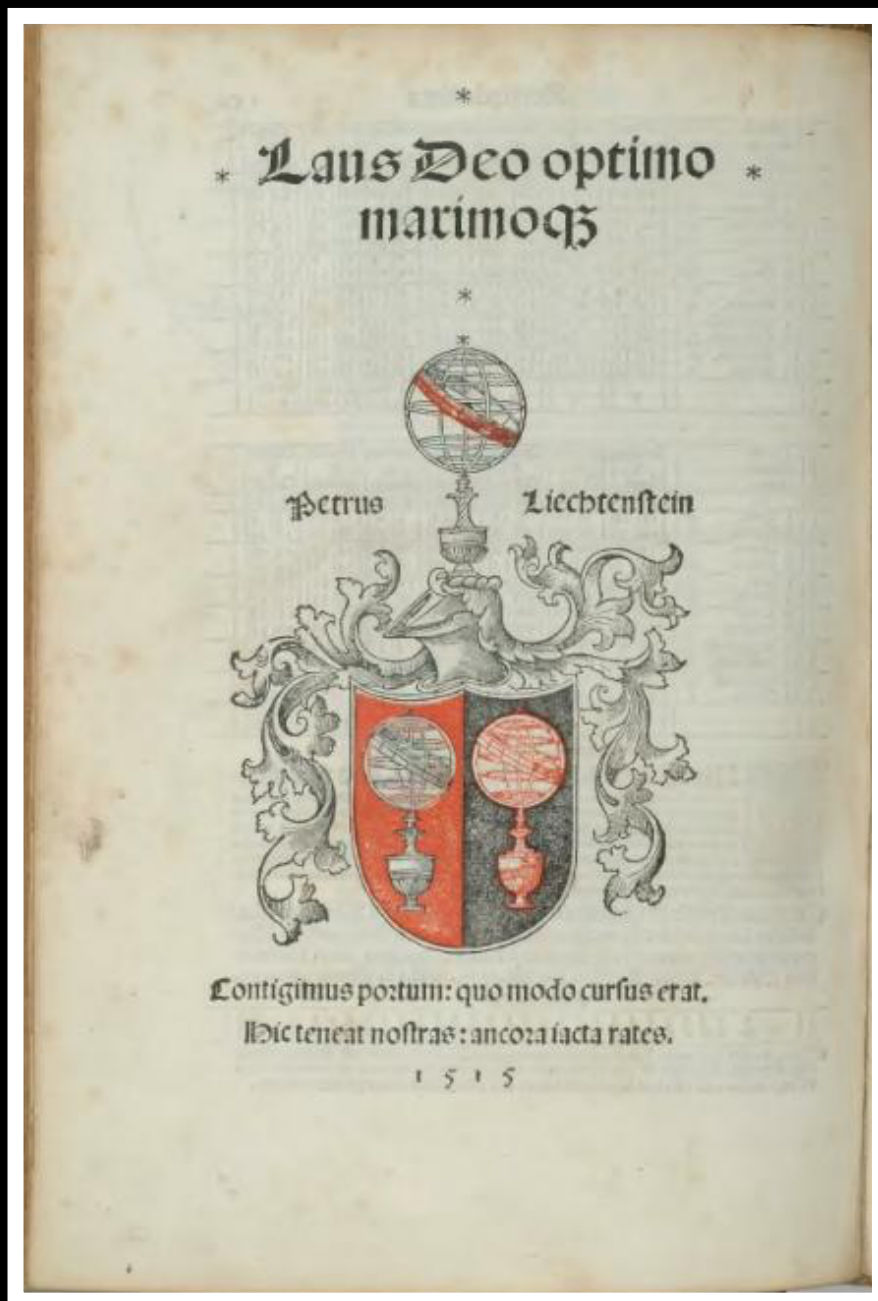
Иоганн Кеплер





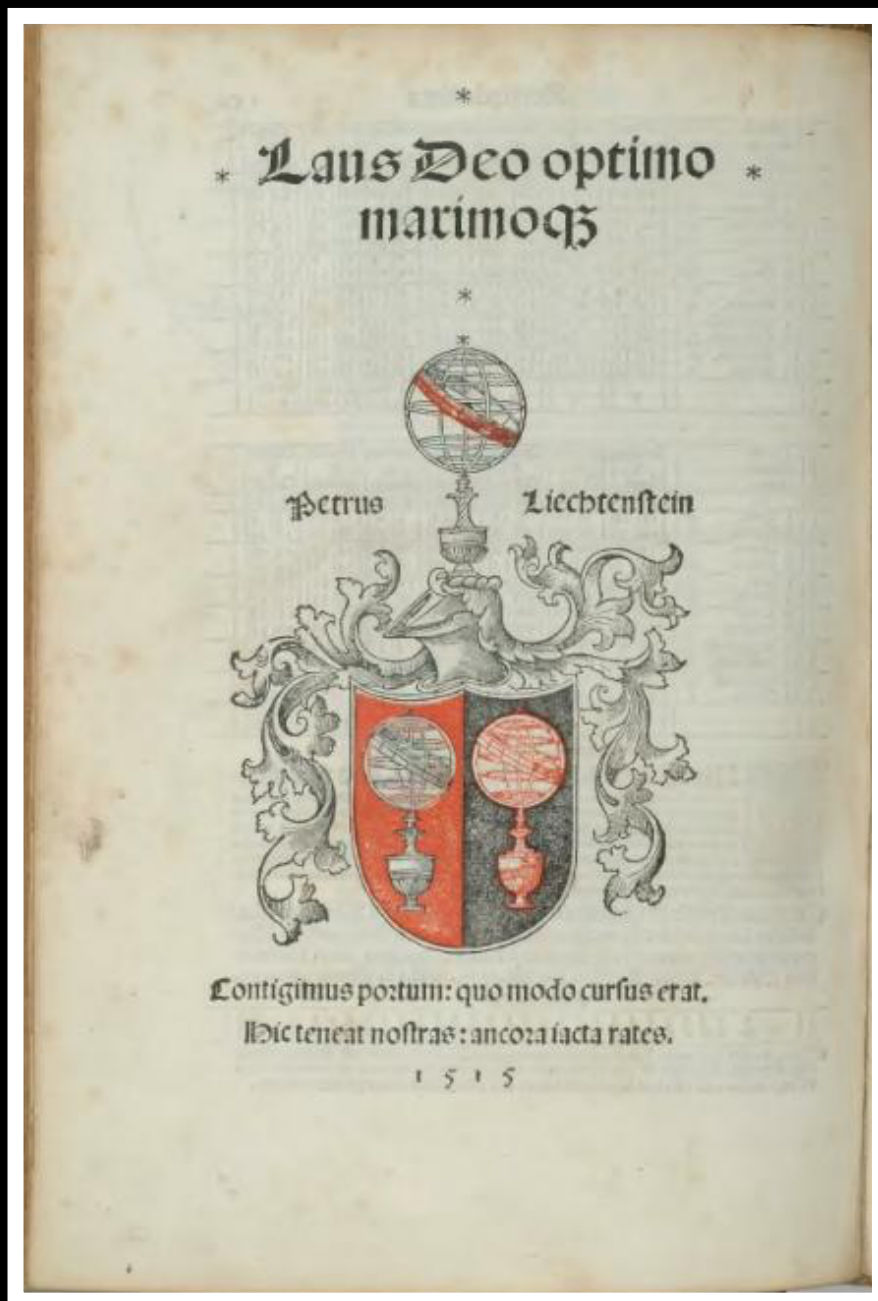
Иоганн Кеплер





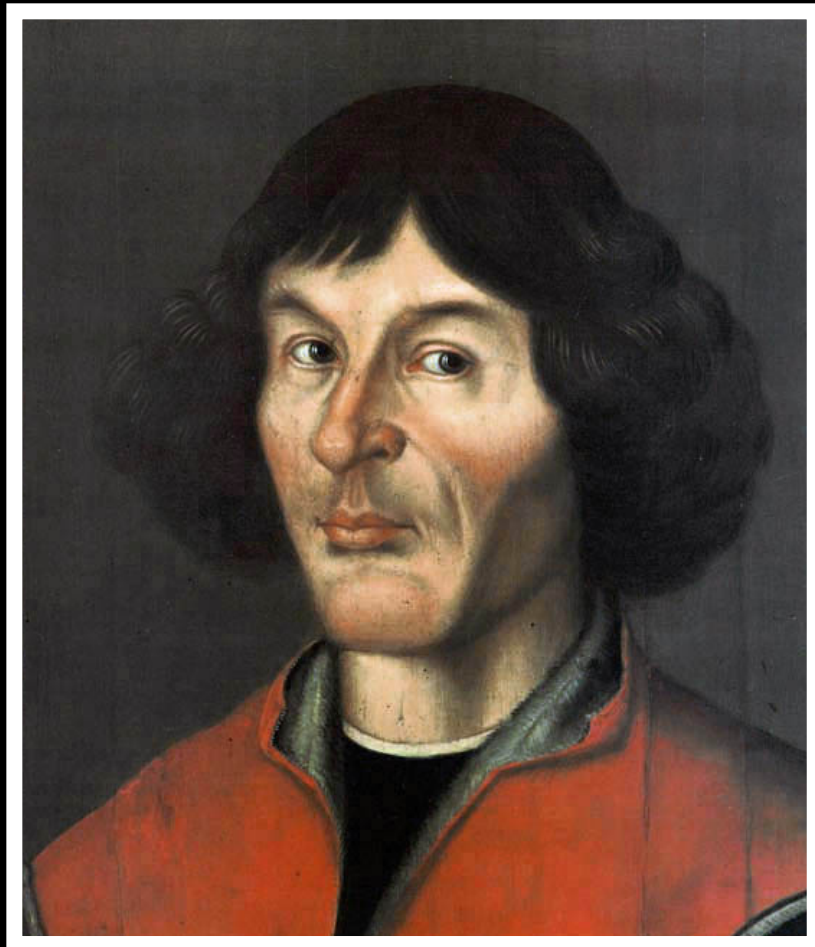
Альмагест



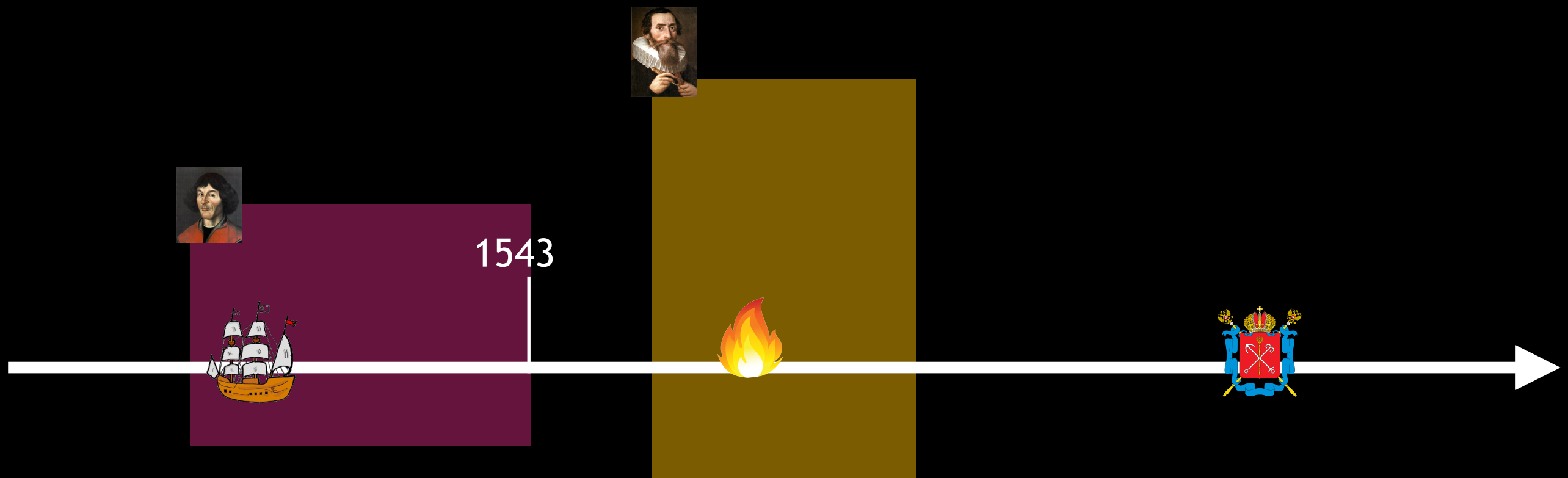


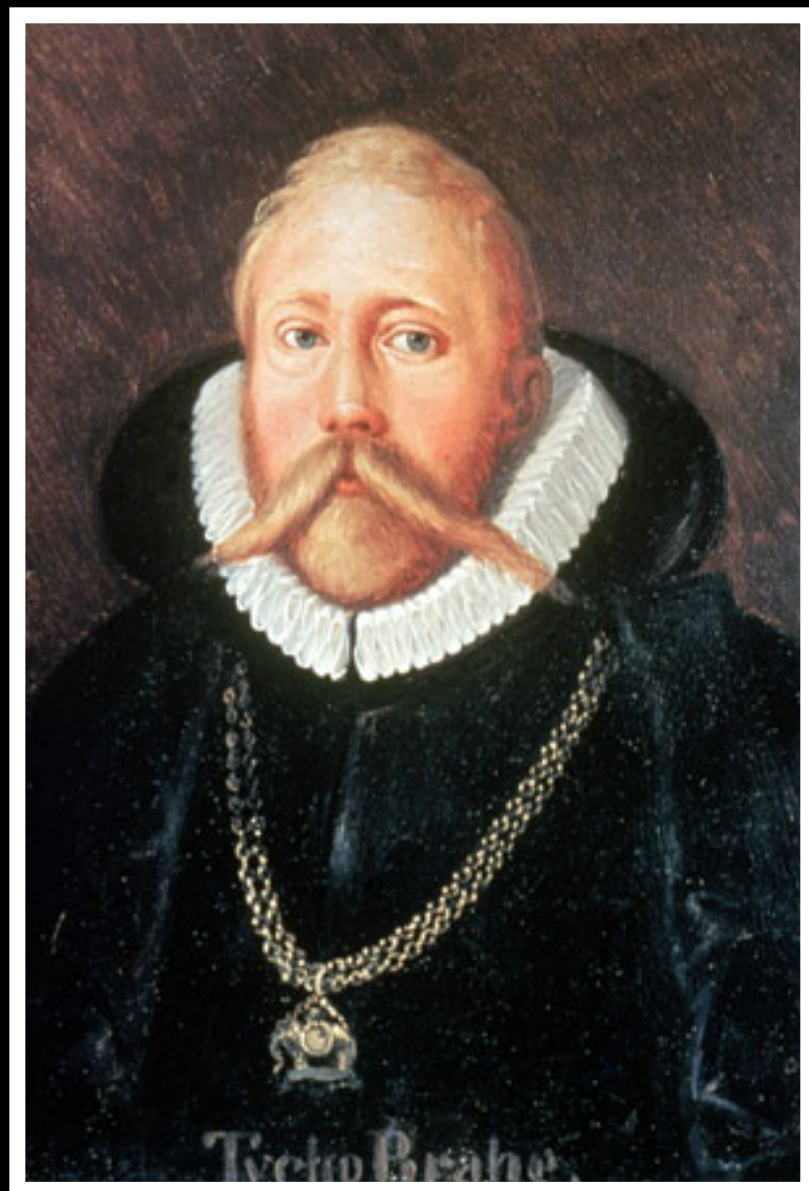
Альмагест



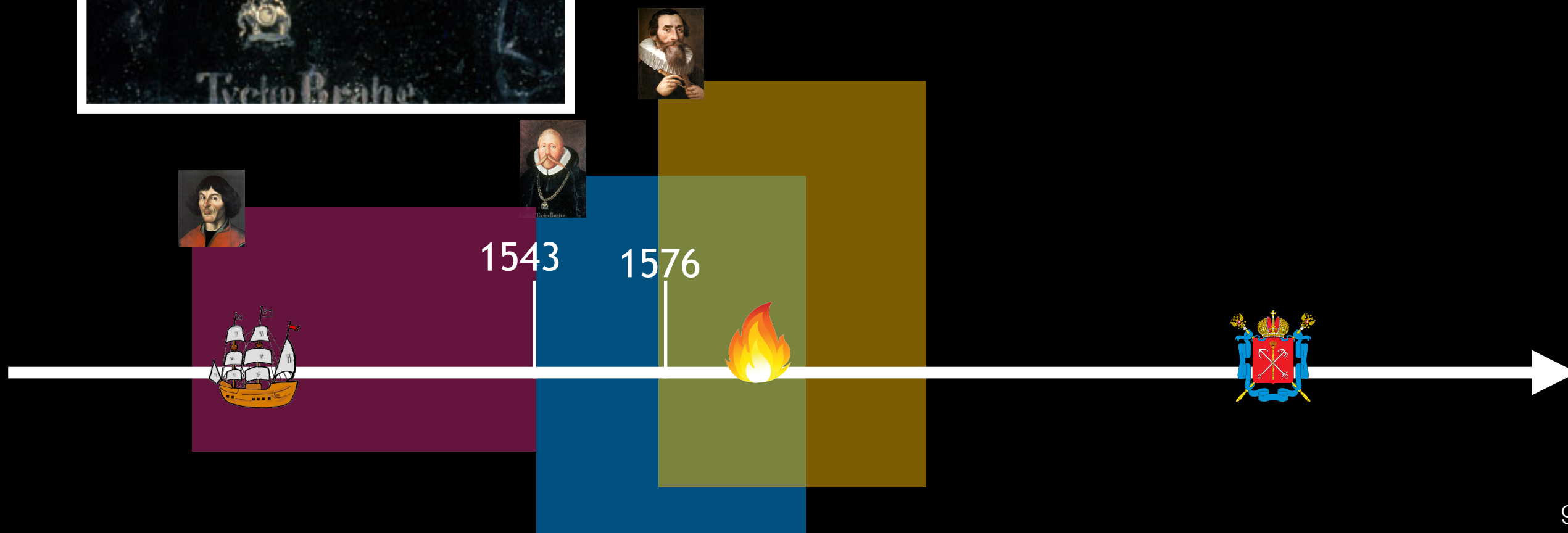


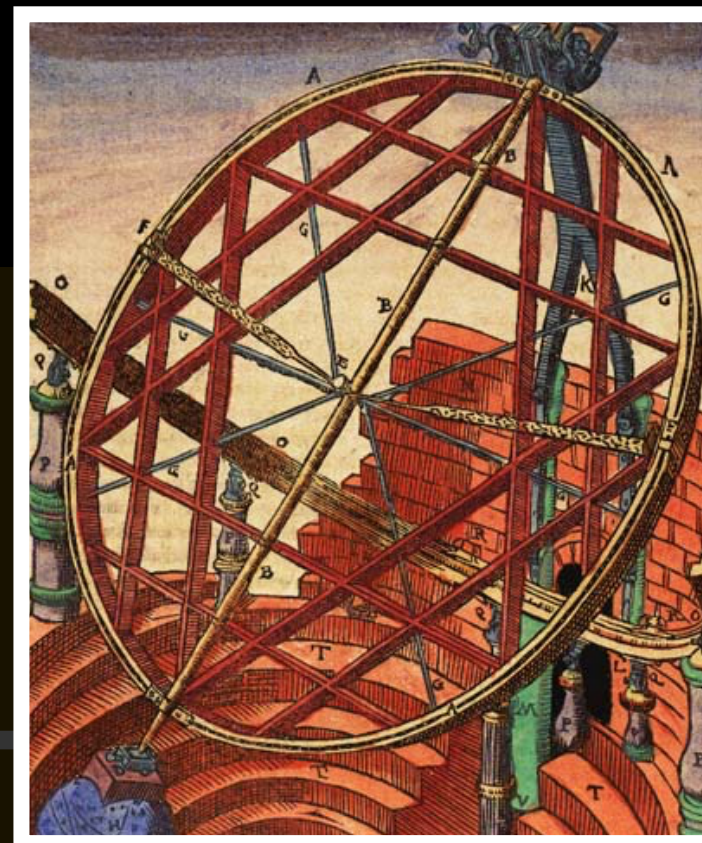
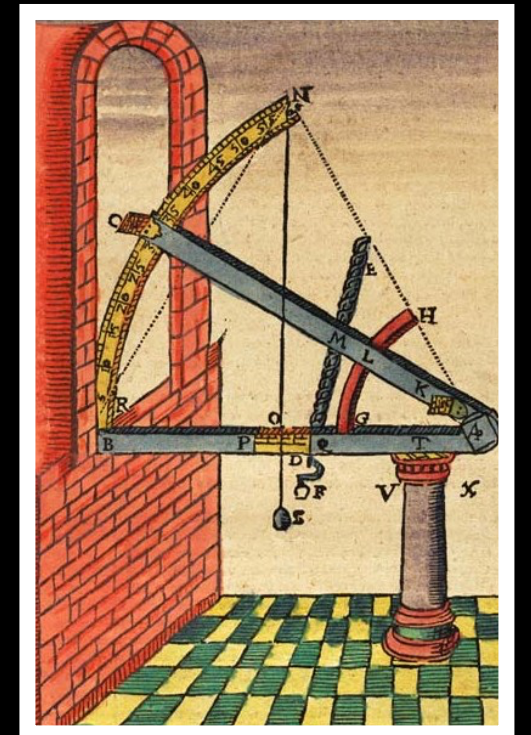
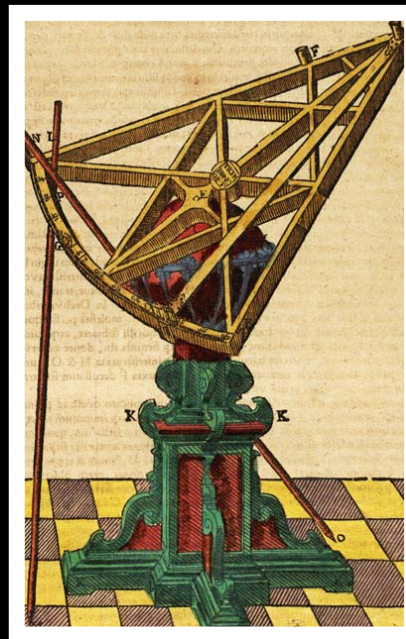
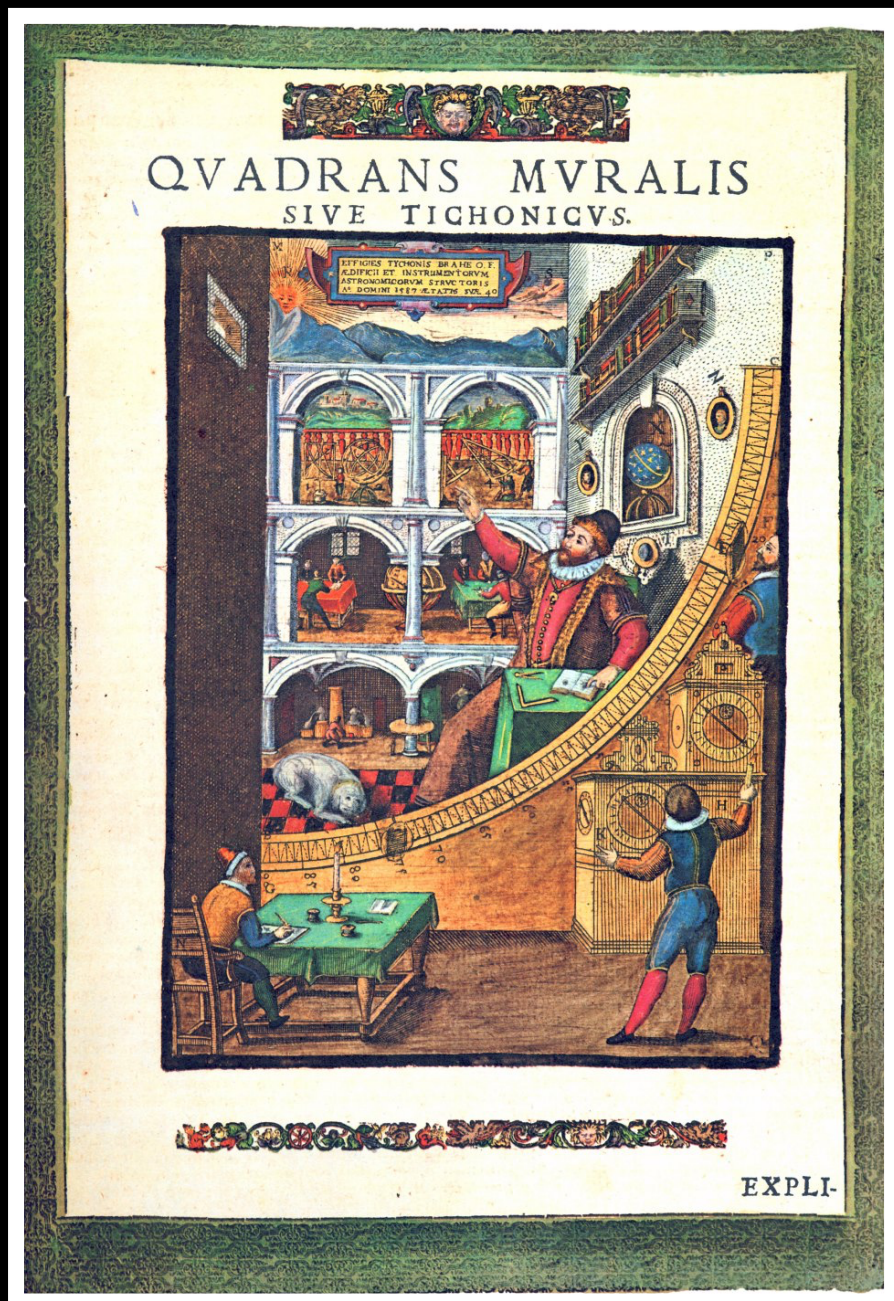
Николай Коперник





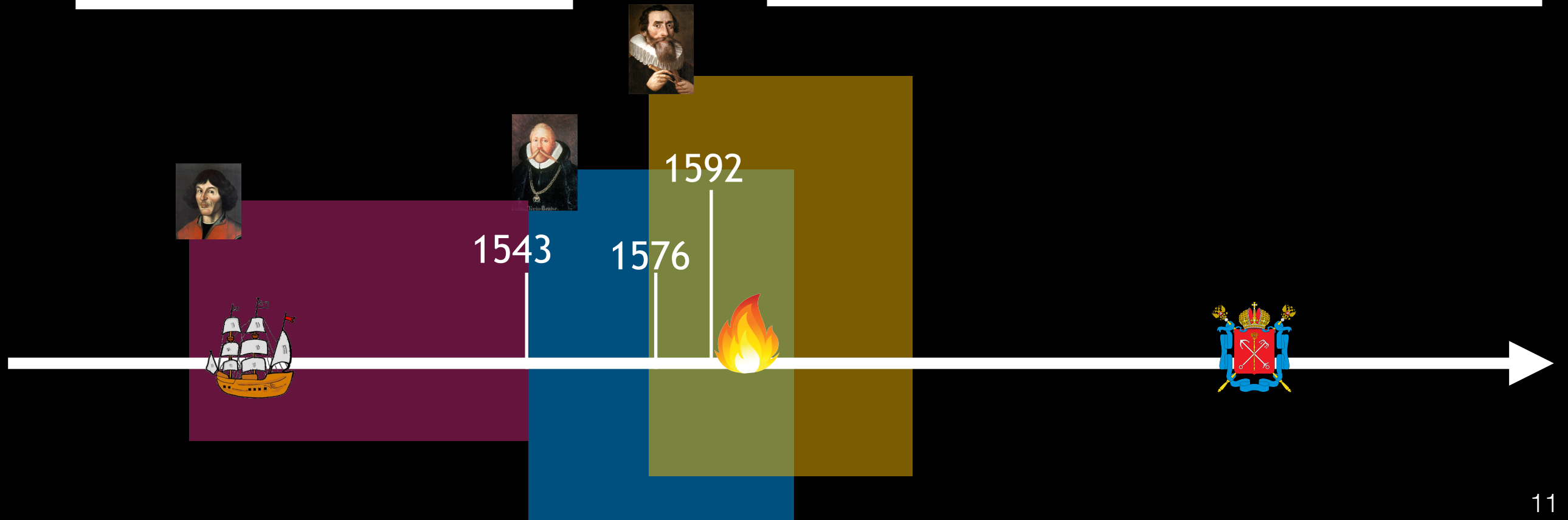
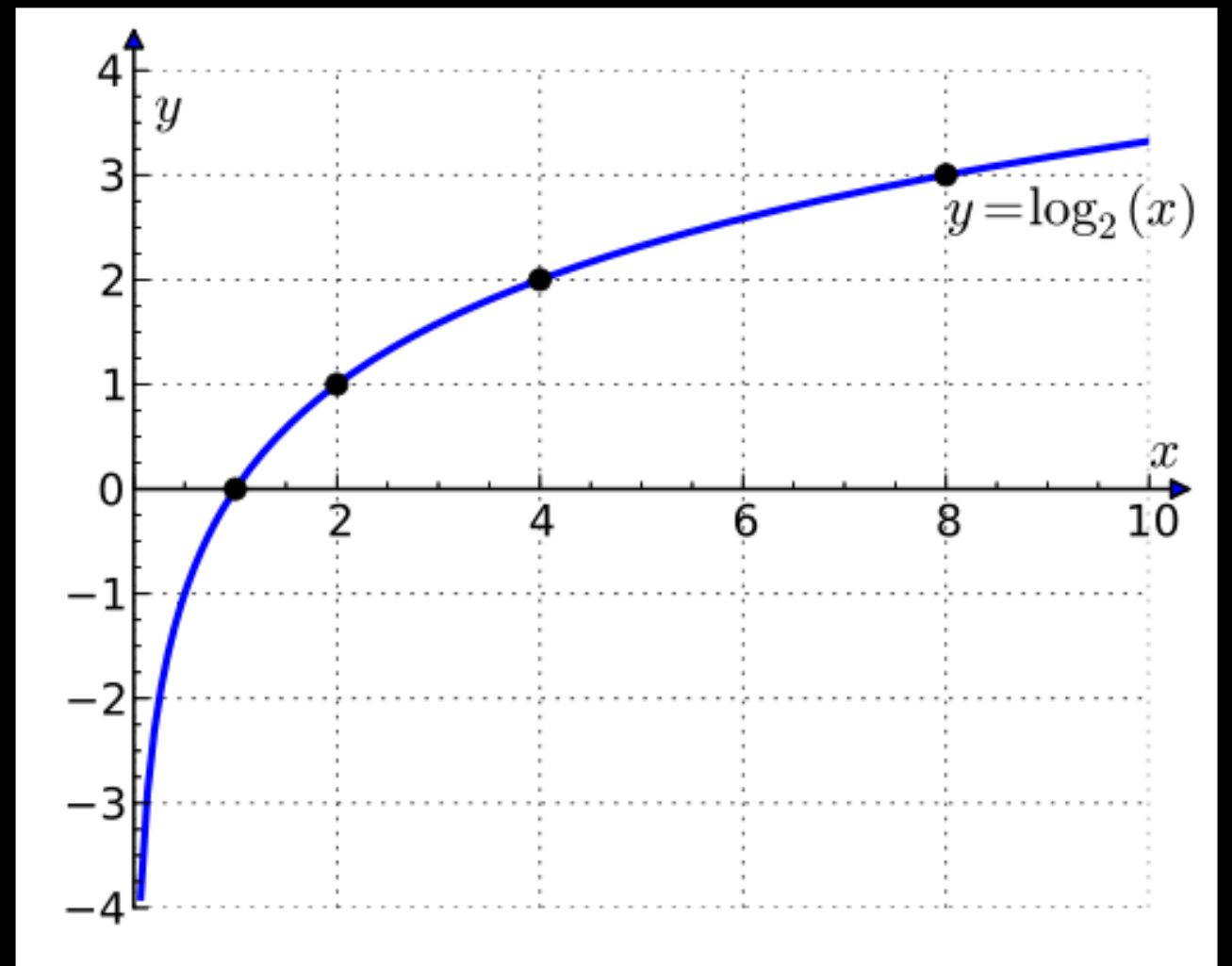
Тихо де Браге

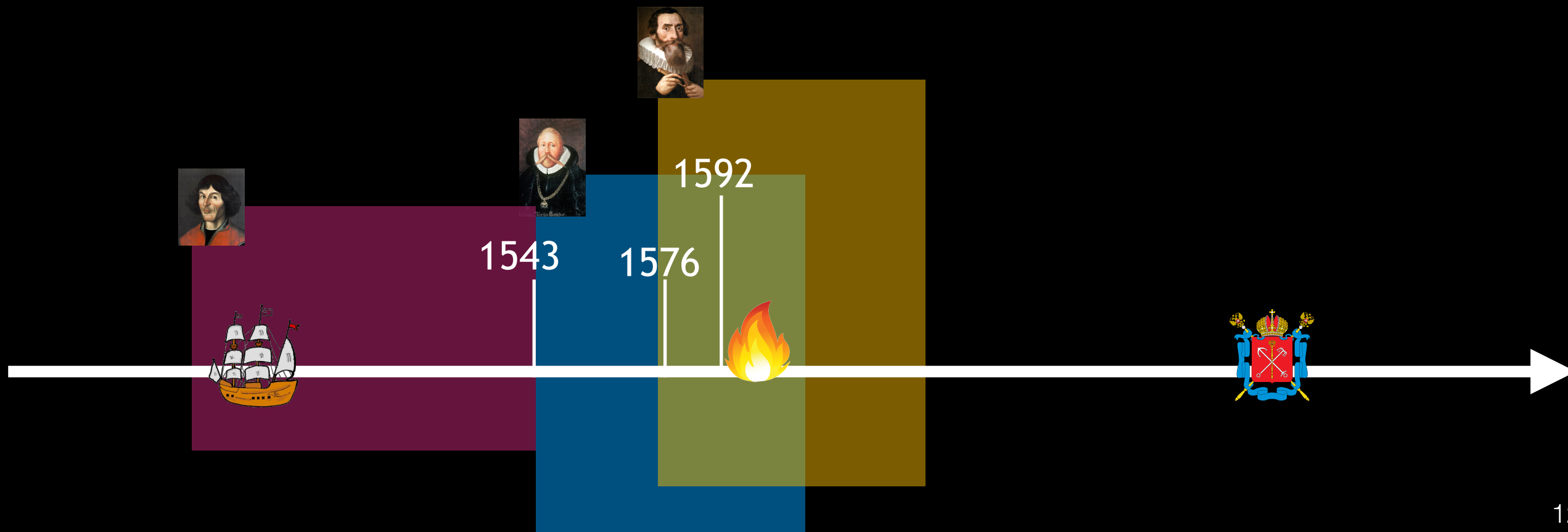




1543

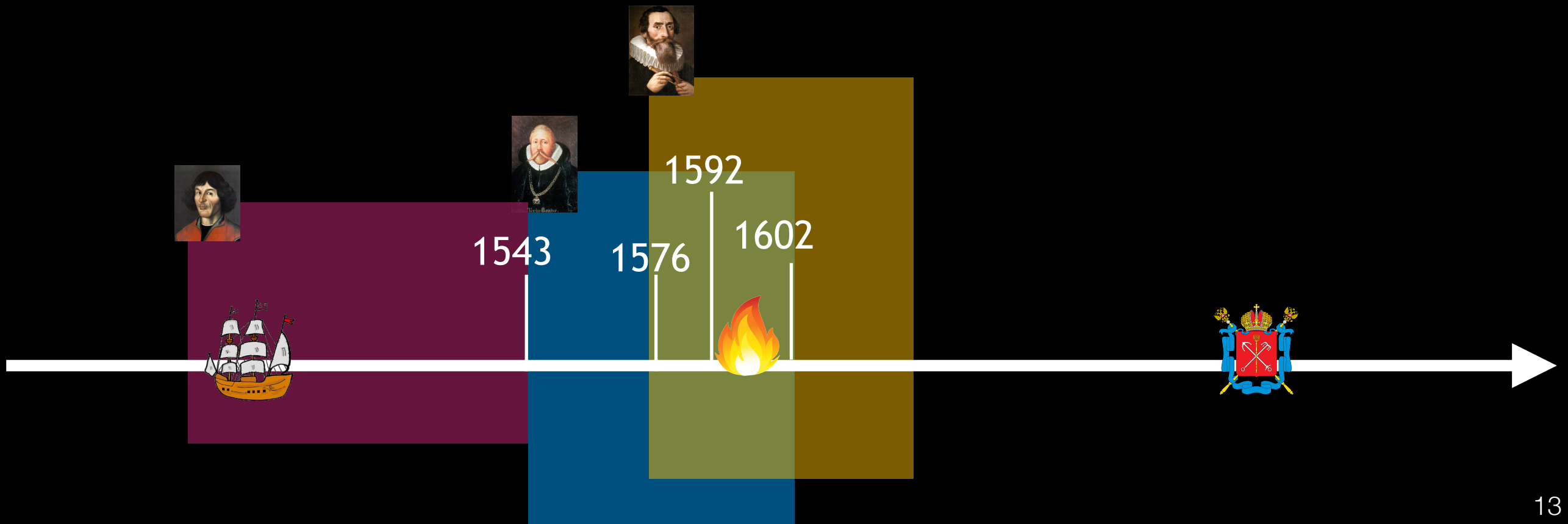
1576

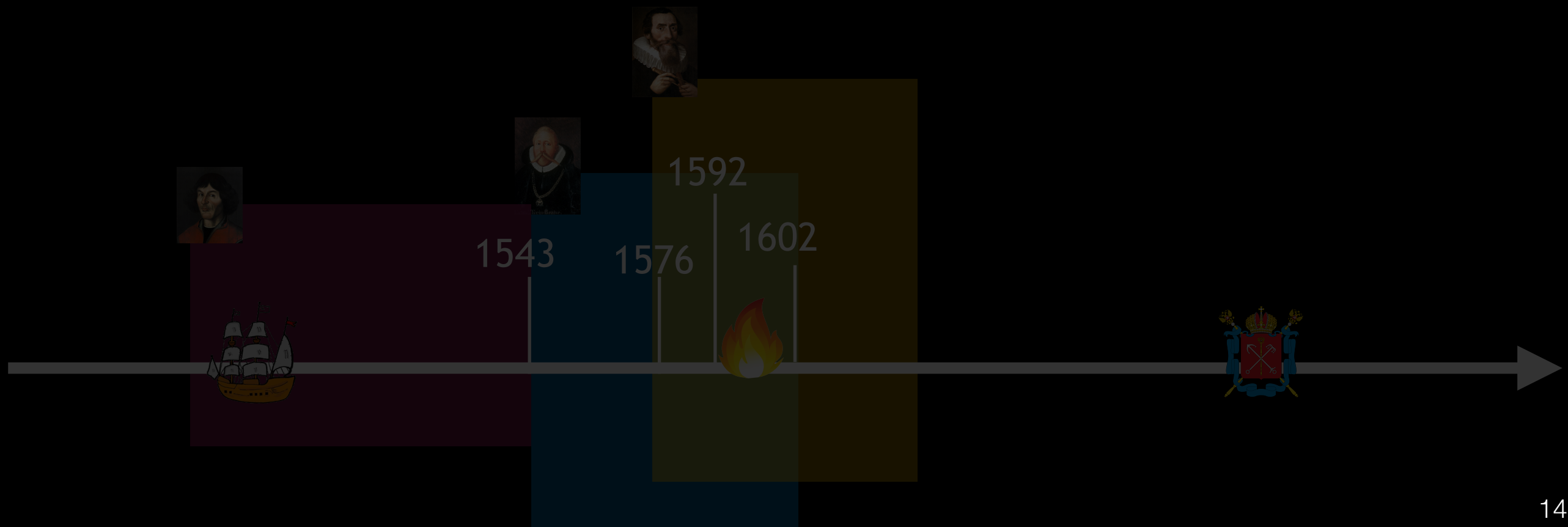
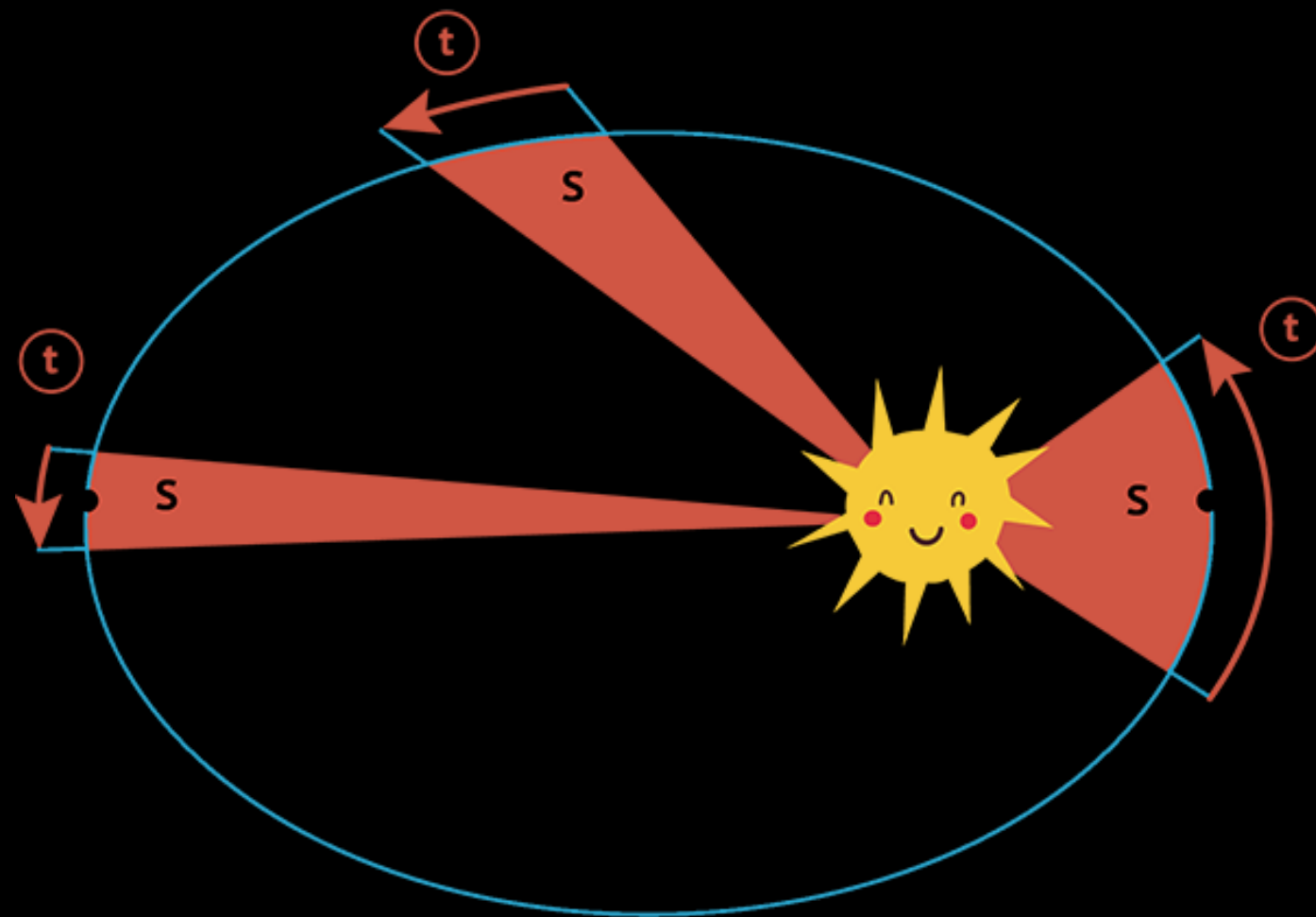


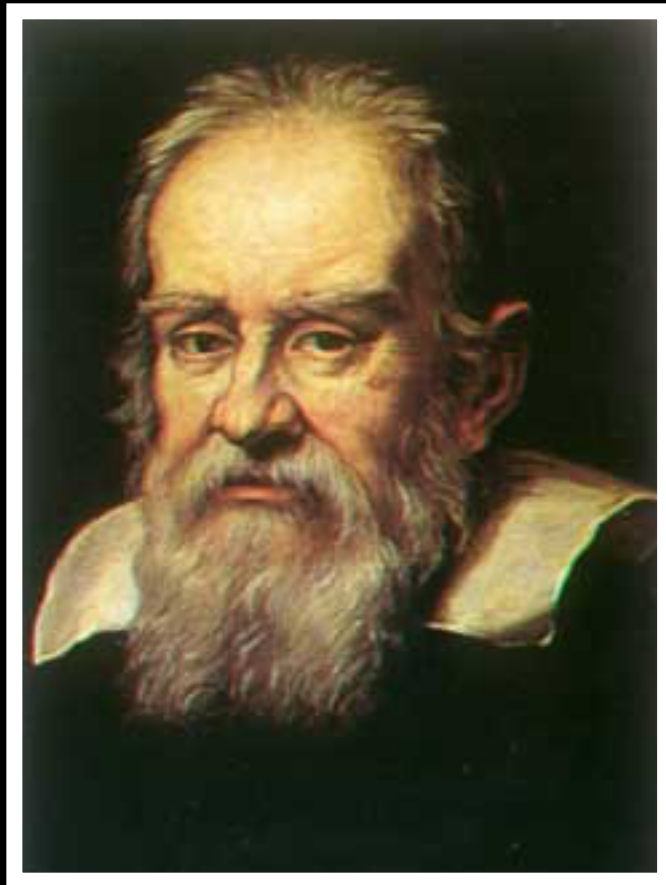


2

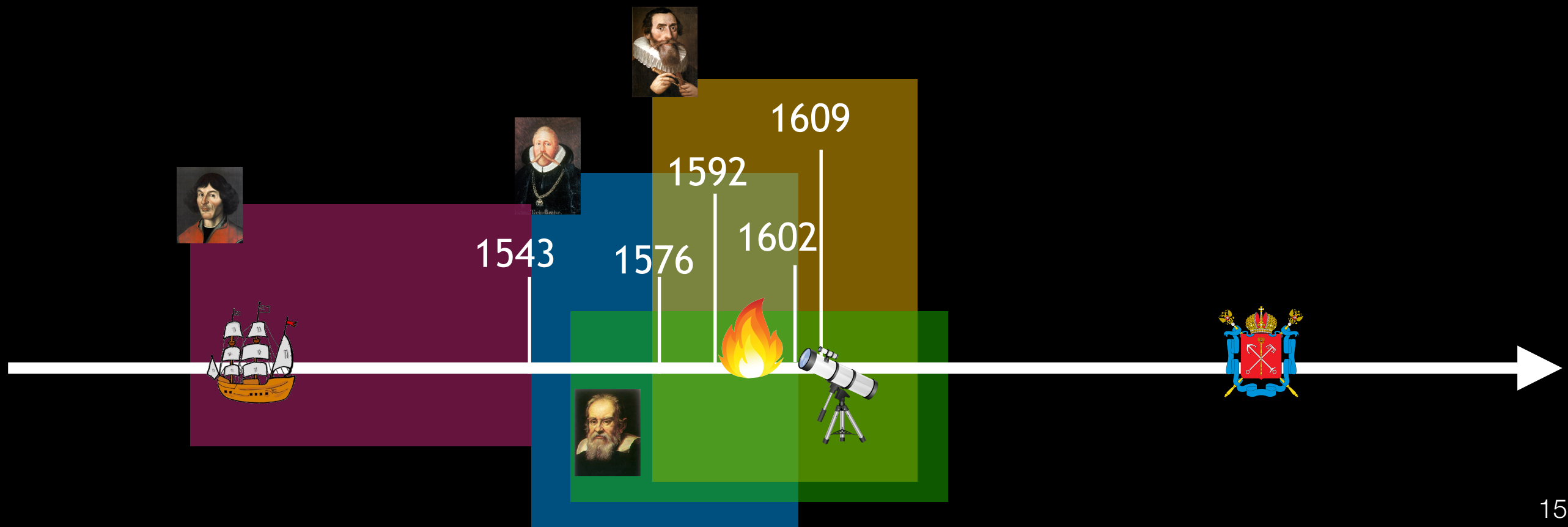
Каждая планета движется в плоскости, проходящей через центр Солнца, причём за равные промежутки времени радиус-вектор, соединяющий Солнце и планету, описывает равные площади.





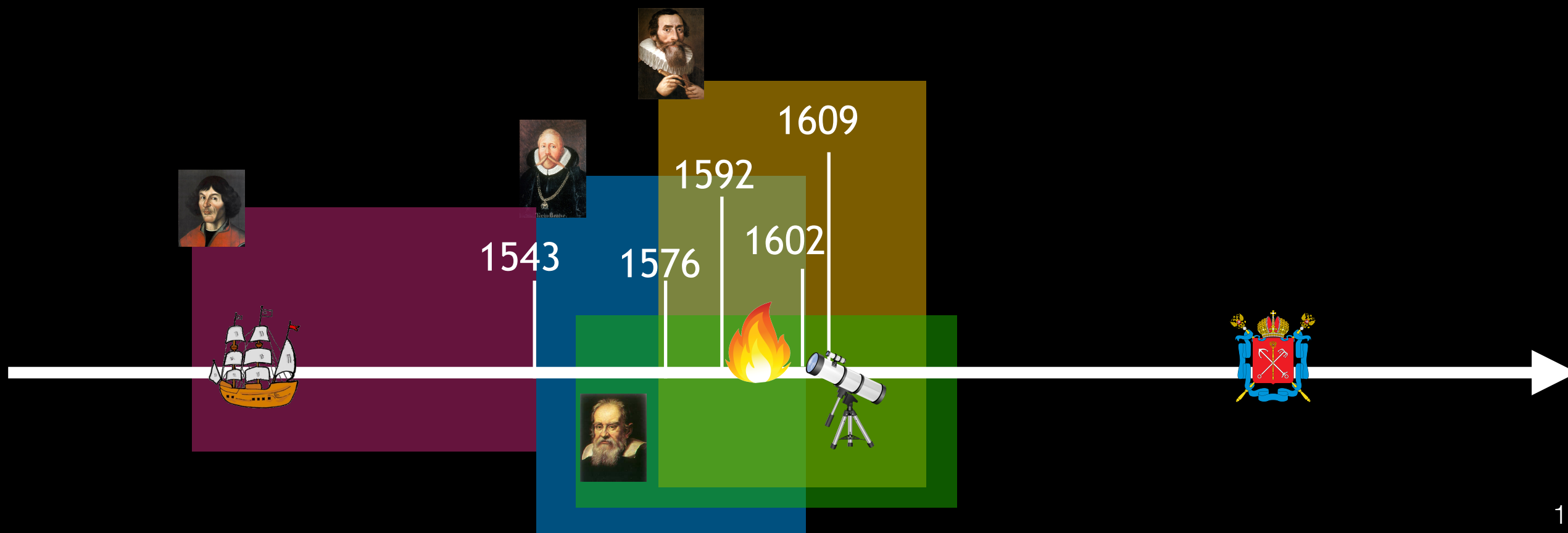


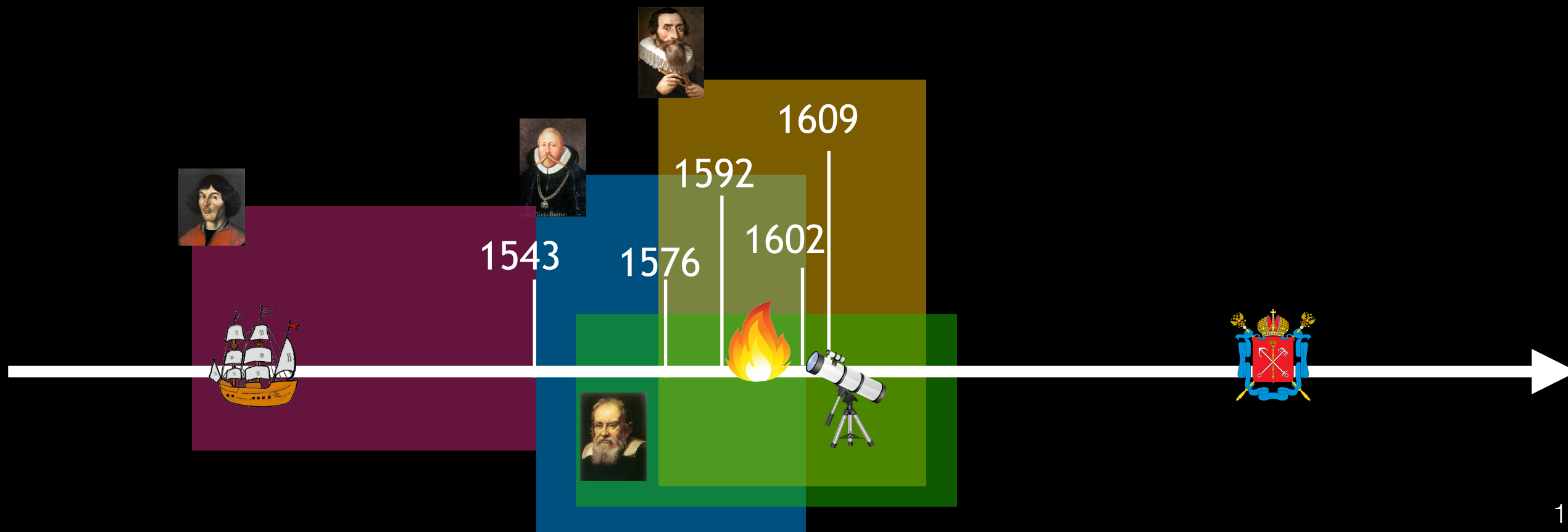
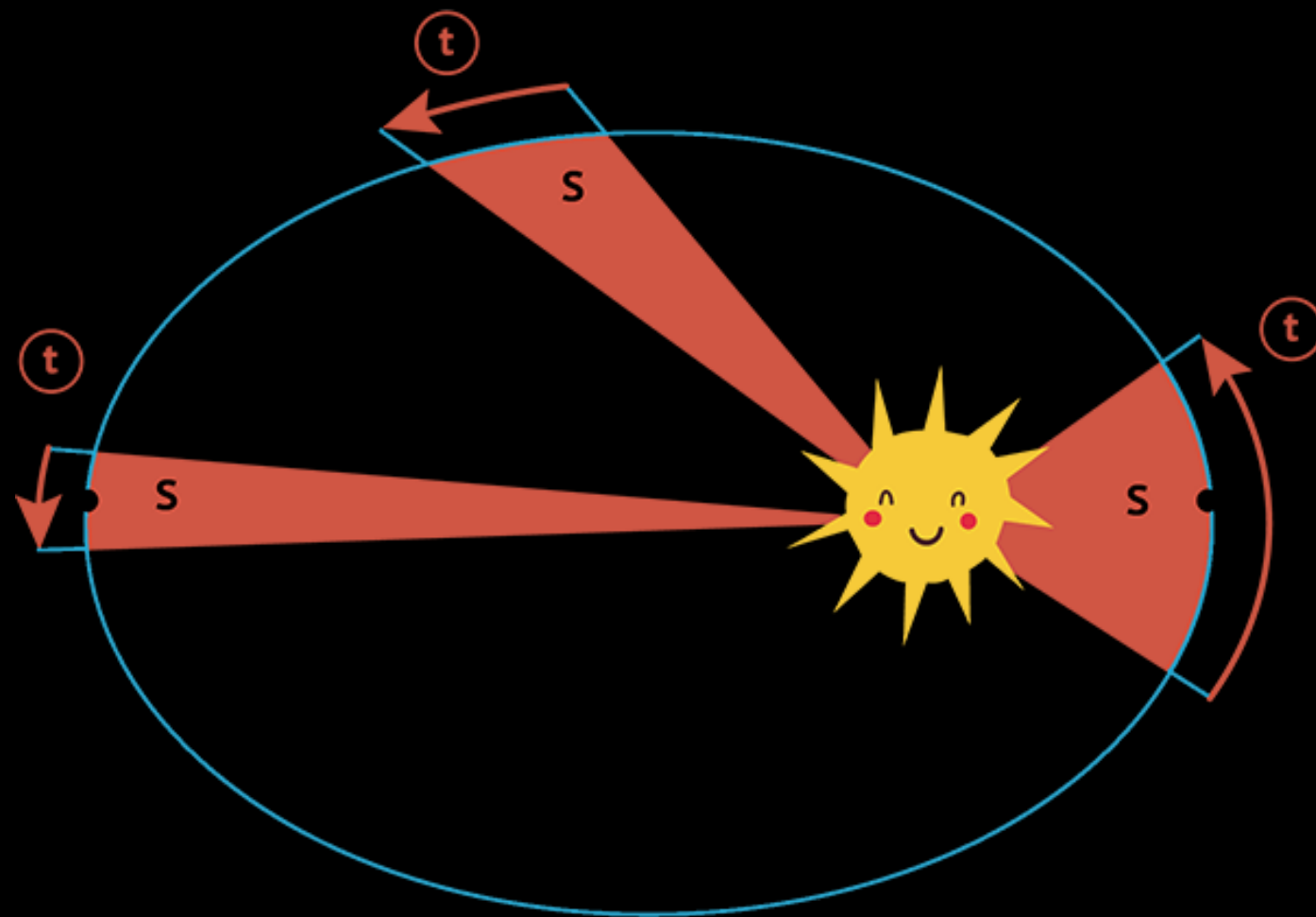
Галилео Галилей



1

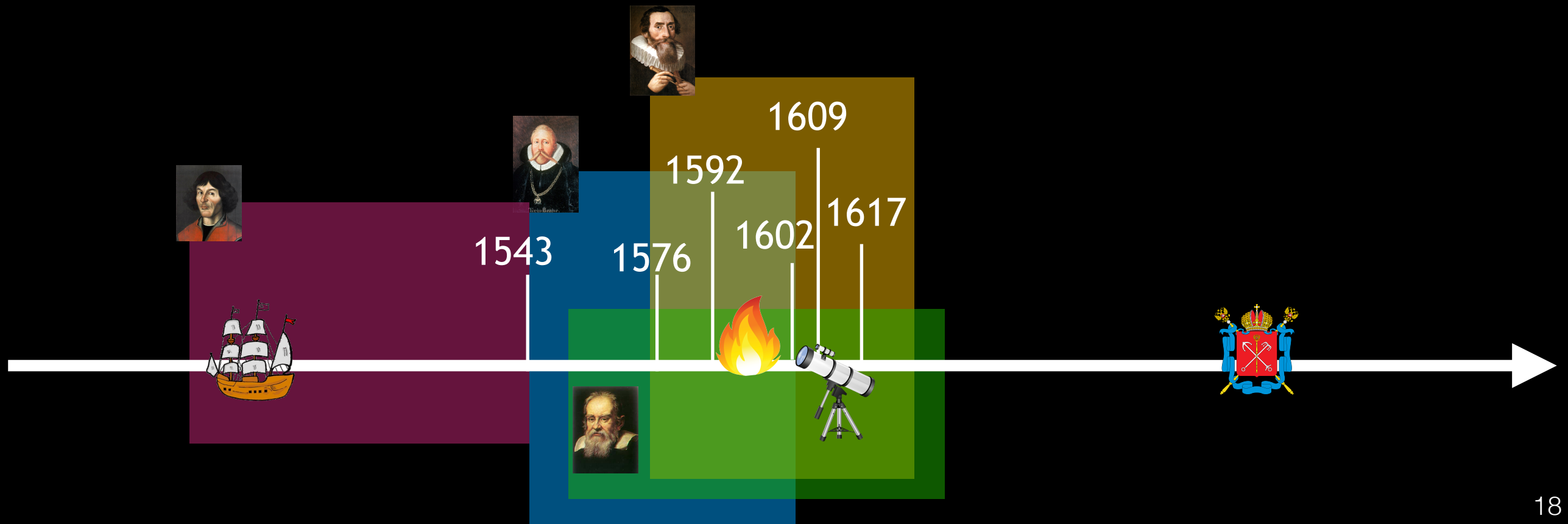
Каждая планета Солнечной системы обращается по эллипсу, в одном из фокусов которого находится Солнце.



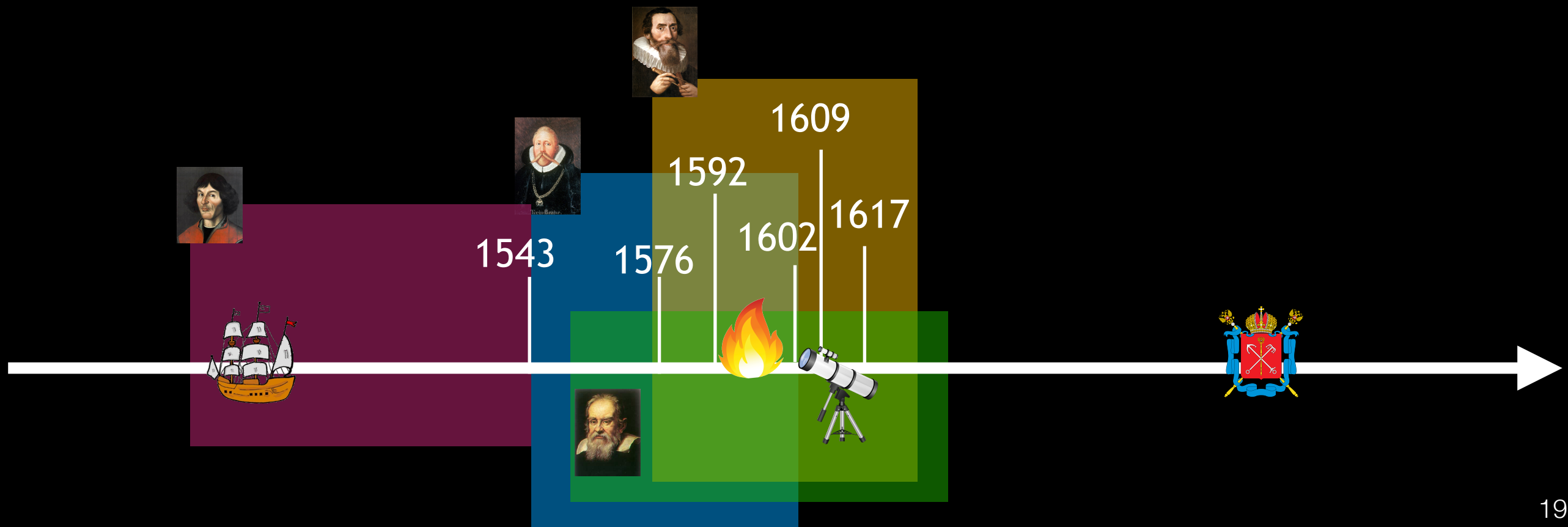


3

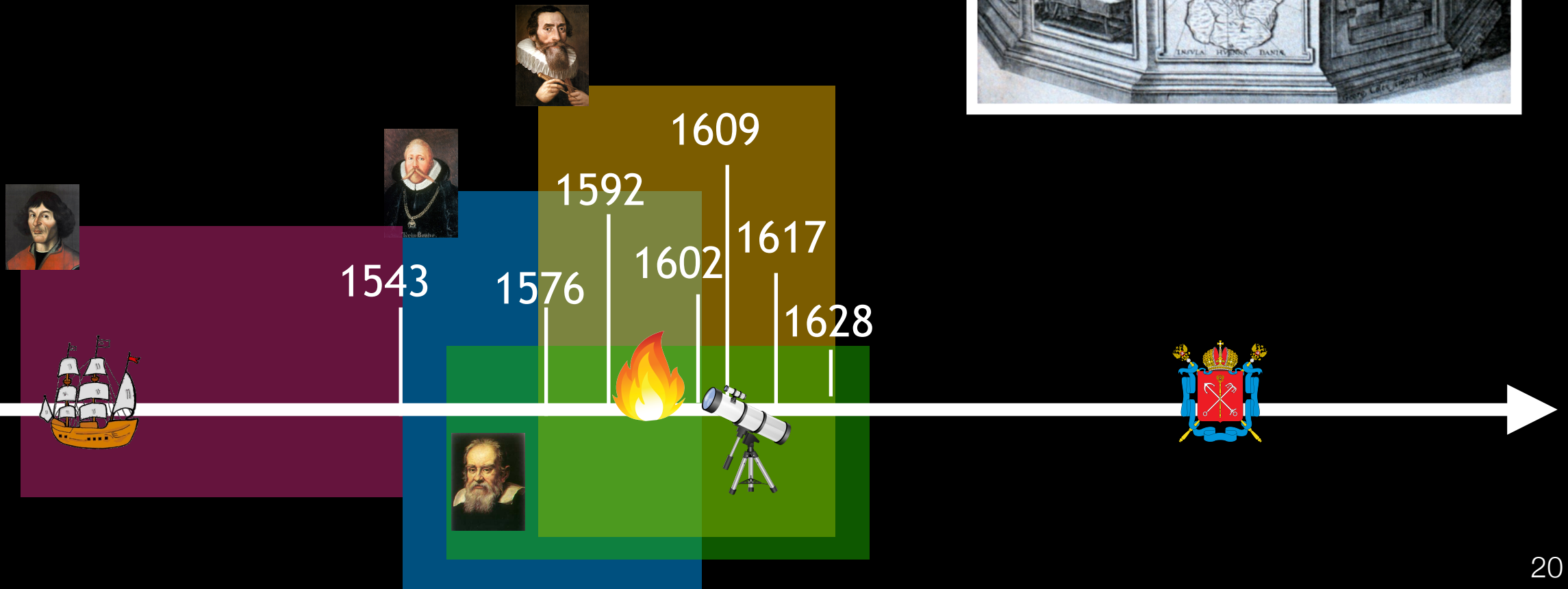
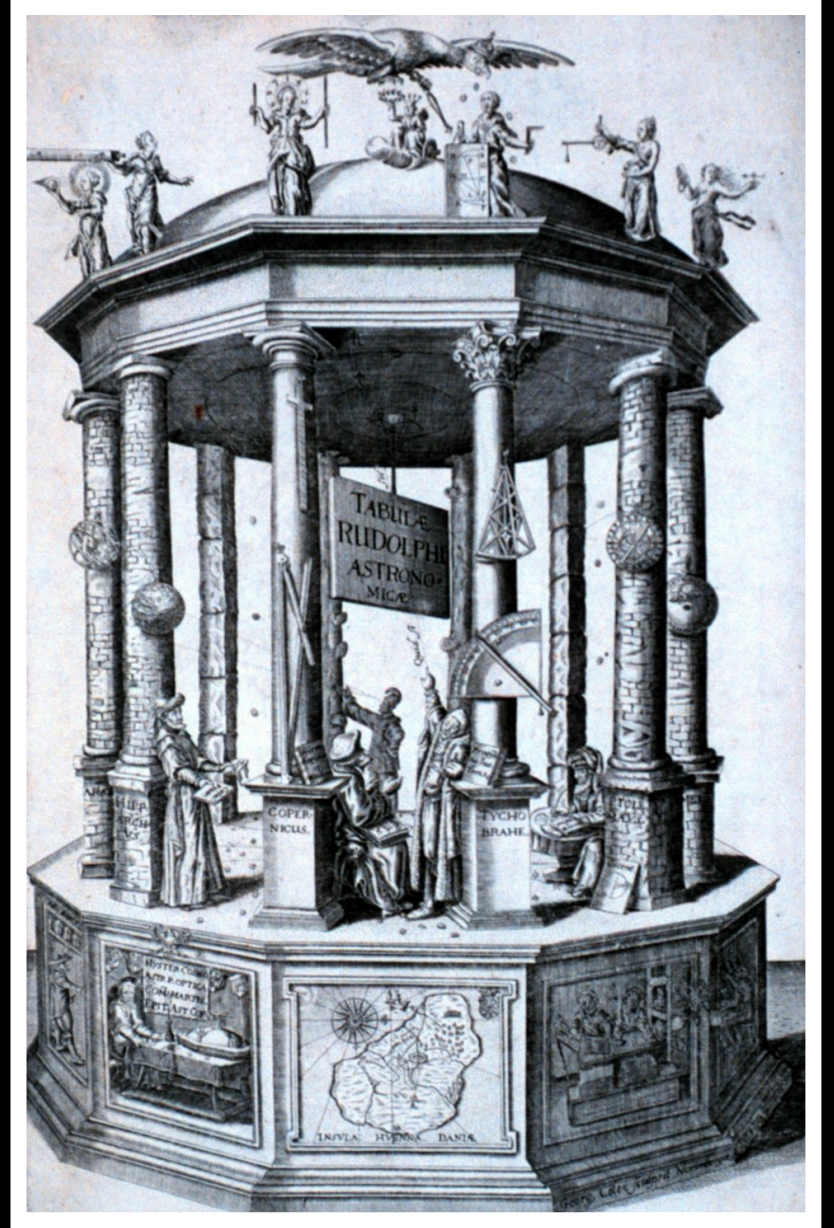
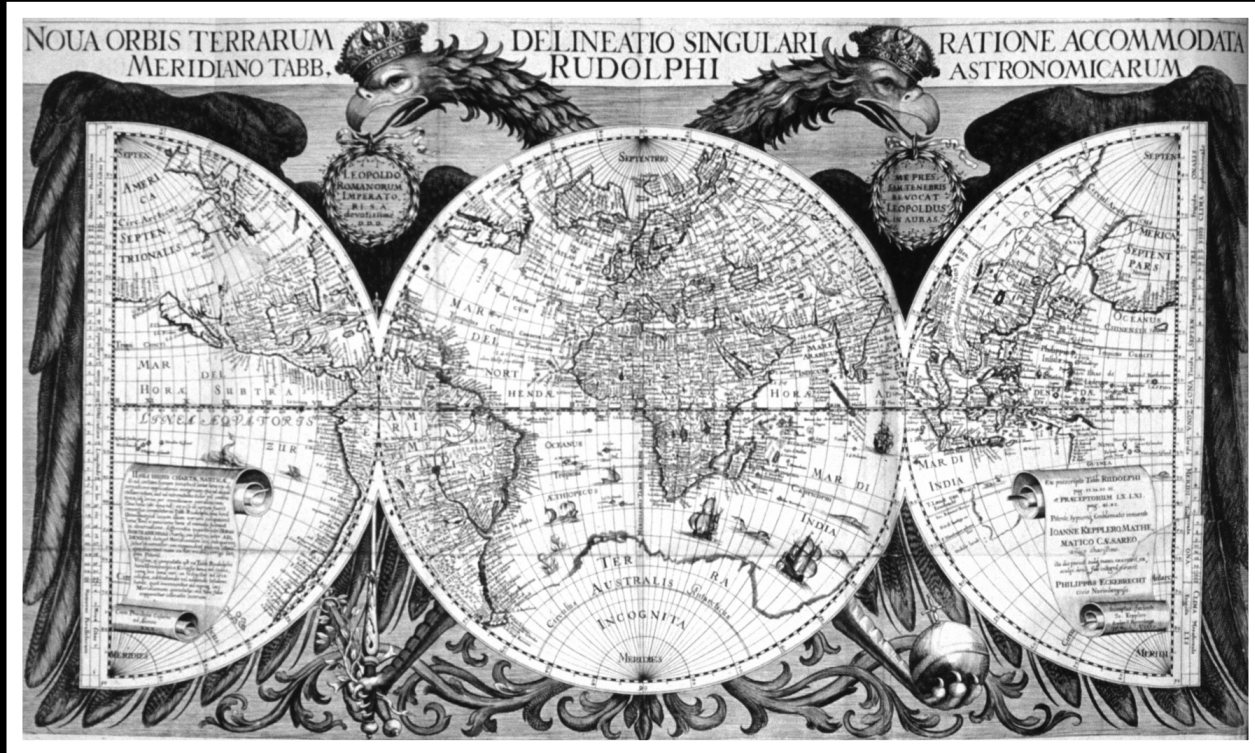
Квадраты периодов обращения планет вокруг Солнца
относятся как кубы больших полуосей орбит планет.

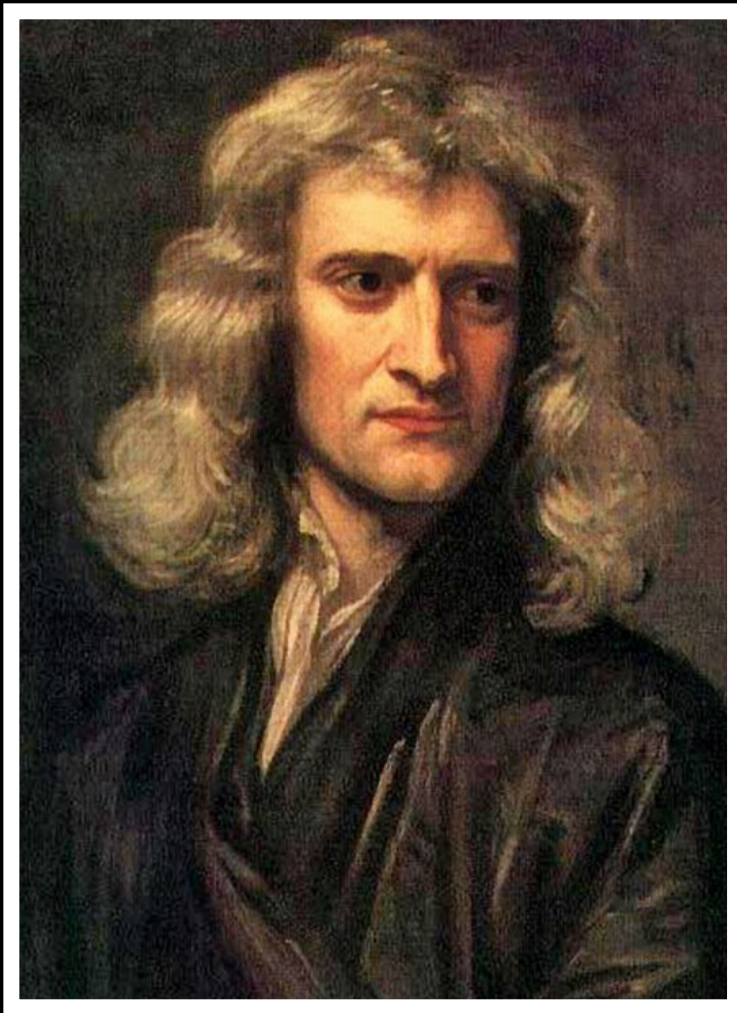


$$\frac{T_1^2}{R_1^3} = \frac{T_2^2}{R_2^3} = \text{const}$$

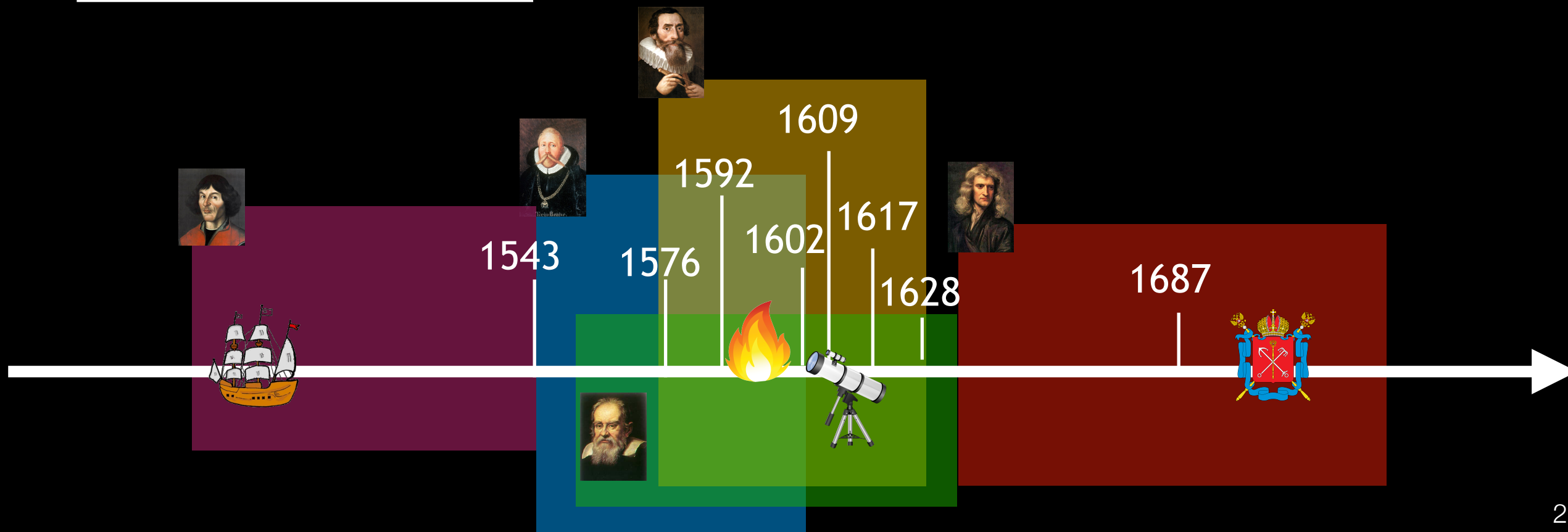


Рудольфинские таблицы





Исаак Ньютон



PHILOSOPHIÆ
NATURALIS
PRINCIPIA
MATHEMATICA.

Autore *J. S. NEWTON*, *Trin. Coll. Cantab. Soc. Matheseos*
Professore Lucasiano, & Societatis Regalis Sodali.

IMPRIMATUR.
S. PEPYS, *Reg. Soc. PRÆSES.*
Julii 5. 1686.

LONDINI,
Jussu Societatis Regiæ ac Typis Josephi Streater. Prostat apud
plures Bibliopolas. Anno MDCLXXXVII.

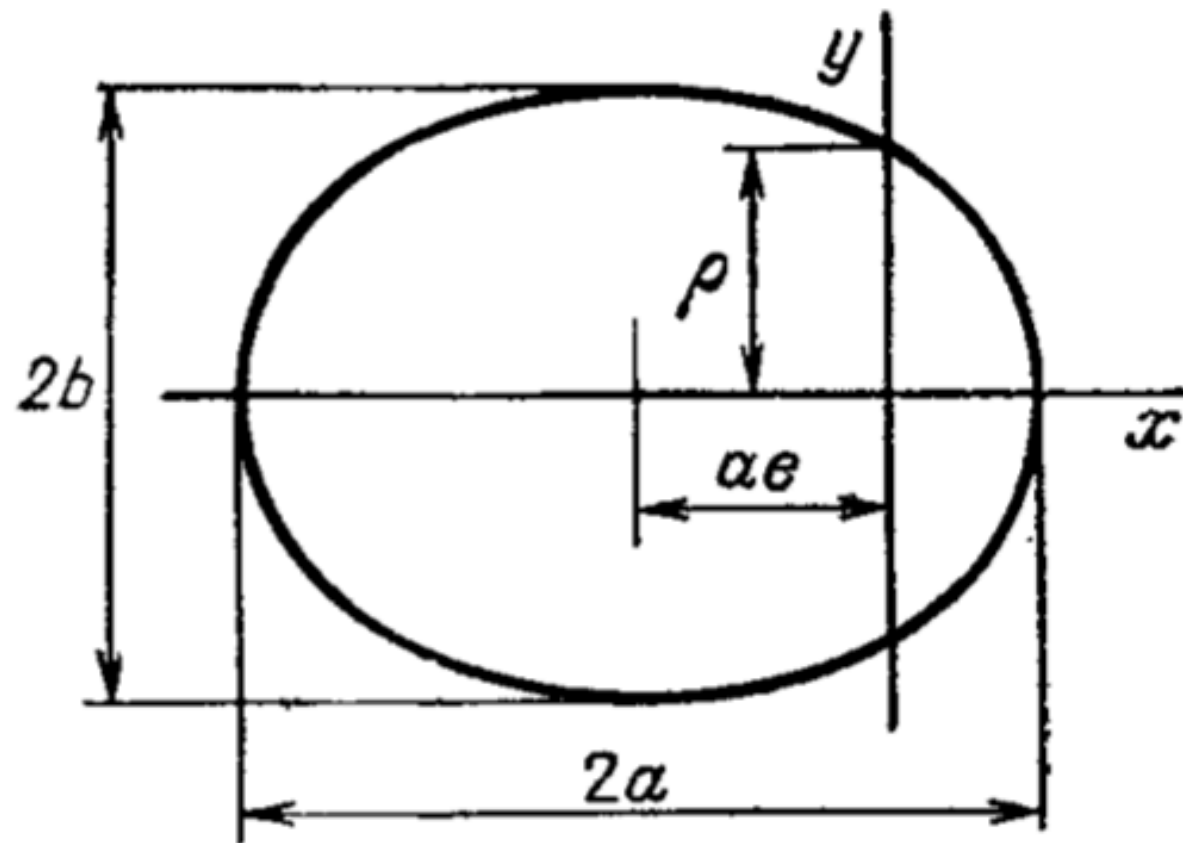
Математические начала
натуральной философии

1609

1617

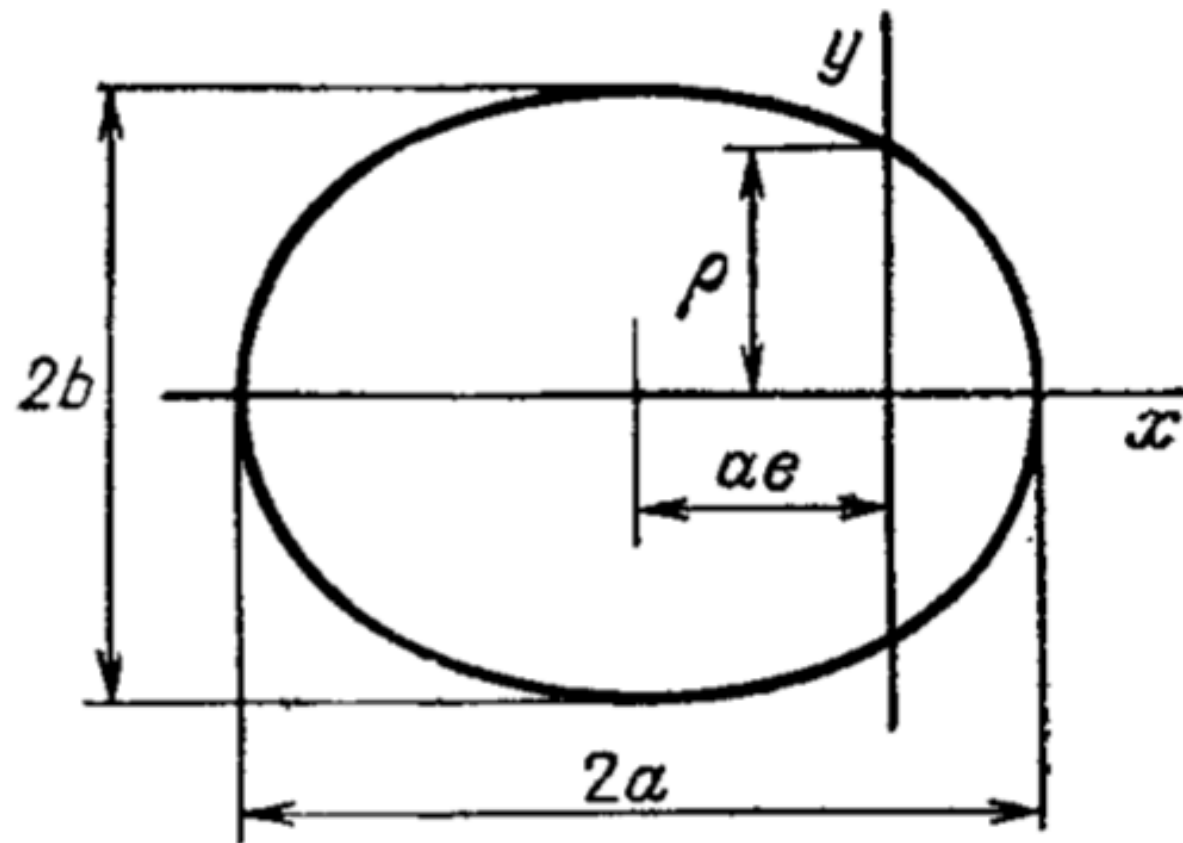
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1687



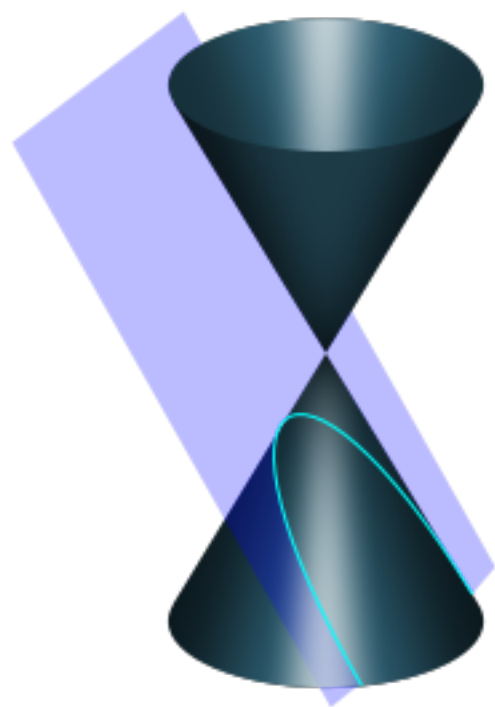
$$U = -\frac{\alpha}{r} \quad (1)$$

$$\varphi = \arccos \frac{\frac{M}{r} - \frac{m\alpha}{M}}{\sqrt{2mE + m^2\alpha^2/M^2}} + \text{const.} \quad (2)$$

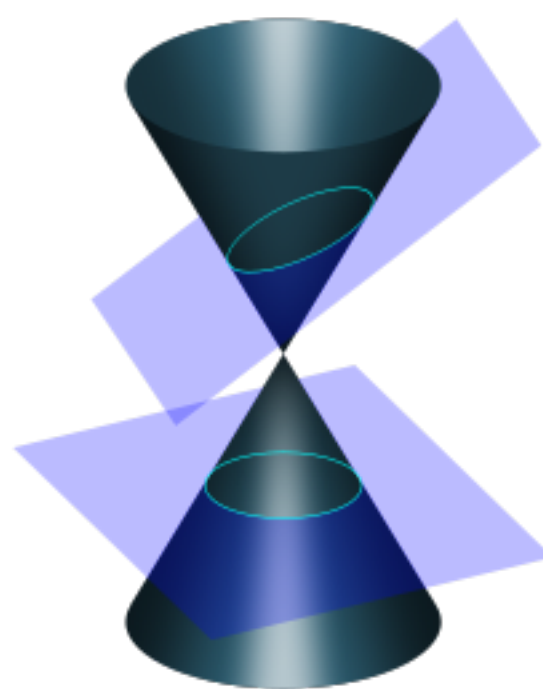


$$p/r = 1 + e \cos \varphi. \quad (4)$$

$$p = \frac{M^2}{m\alpha}, \quad e = \sqrt{1 + \frac{2EM^2}{m\alpha^2}} \quad (3)$$



Парабола

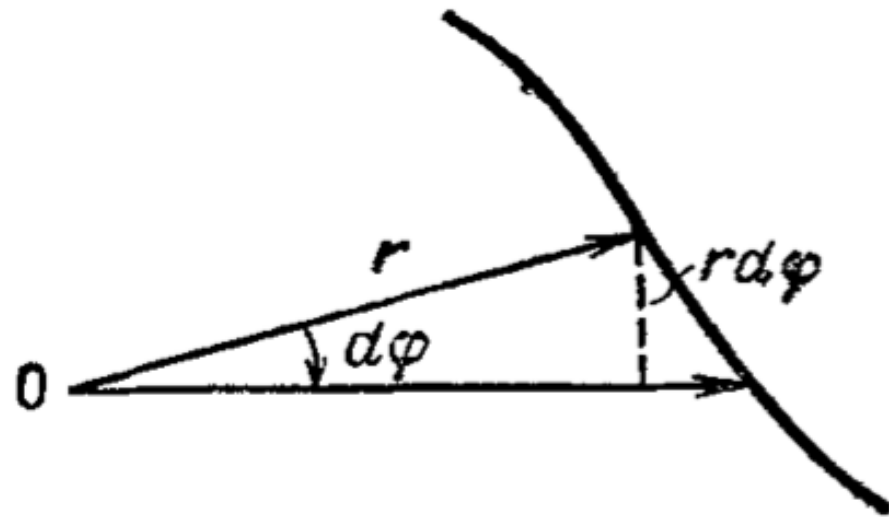


Эллипс



Гипербола

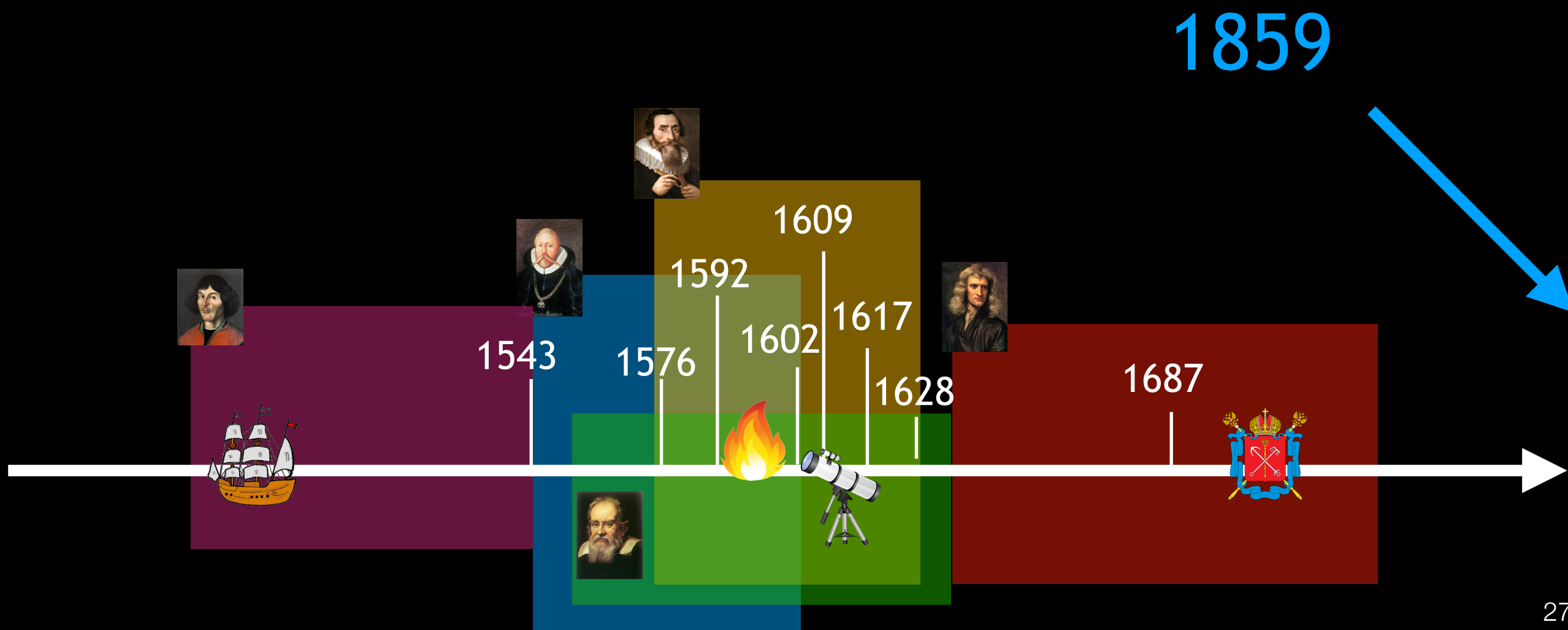
$$M = mr^2\dot{\varphi} = \text{const.} \quad (6)$$

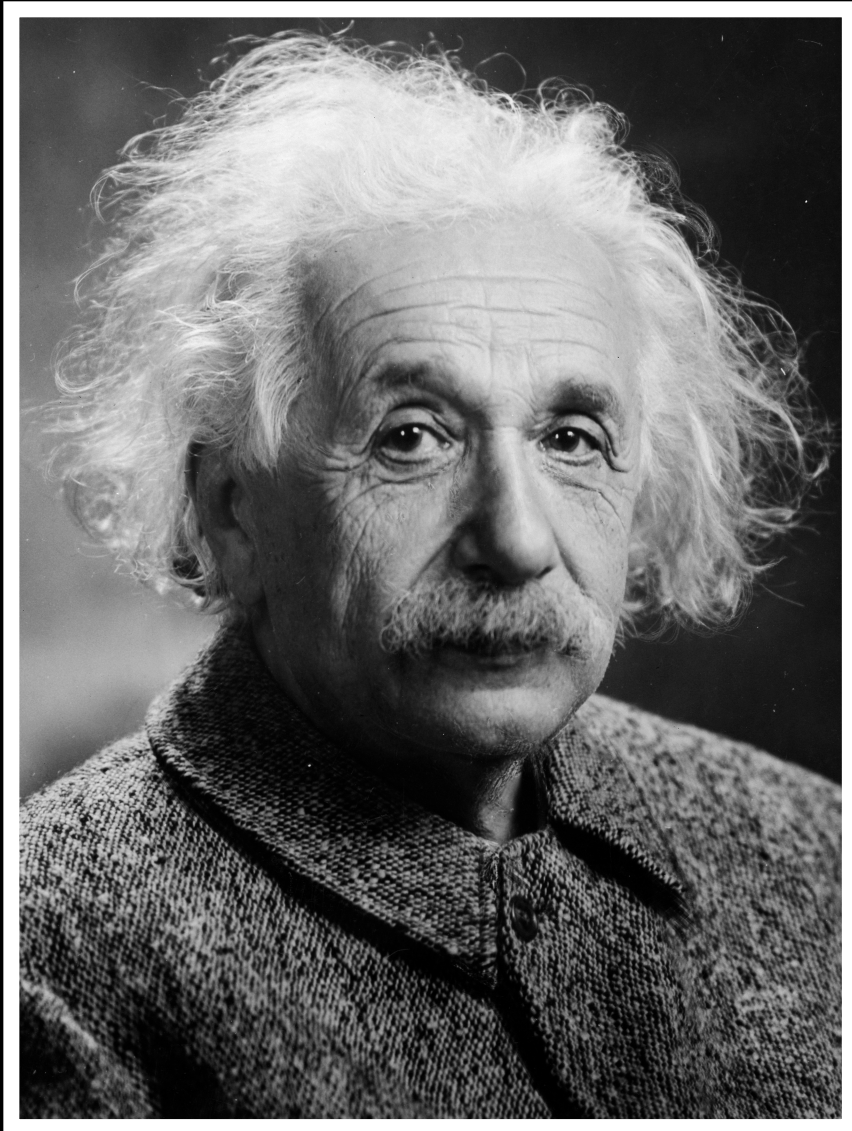


$$2mf = TM, \quad (8)$$

$$T = 2\pi a^{3/2} \sqrt{m/\alpha} \quad (9)$$

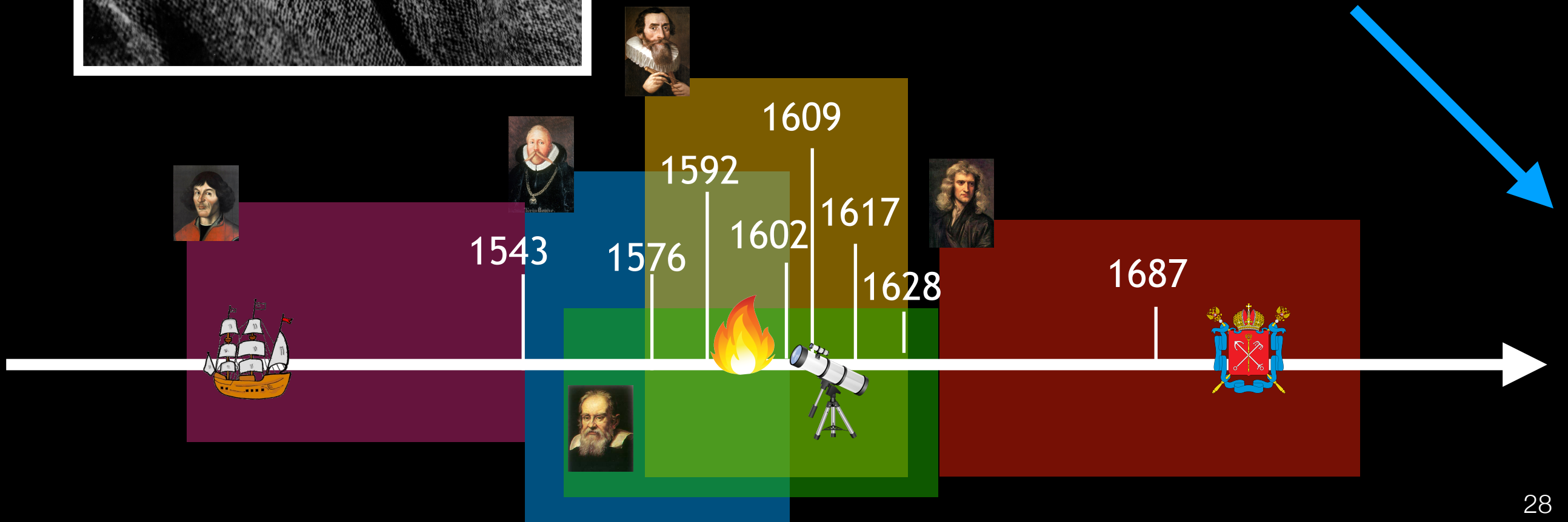
$$M = 2mf, \quad (7)$$

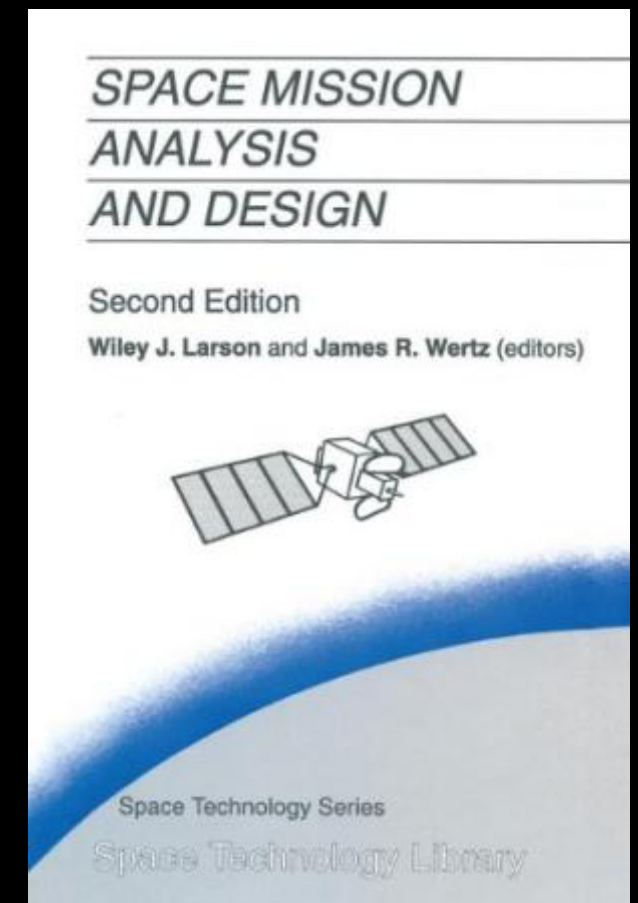




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1859





constantine.korikov@gmail.com