

# Механика коптера

Класс беспилотных технологий  
2016

# Что такое коптер?

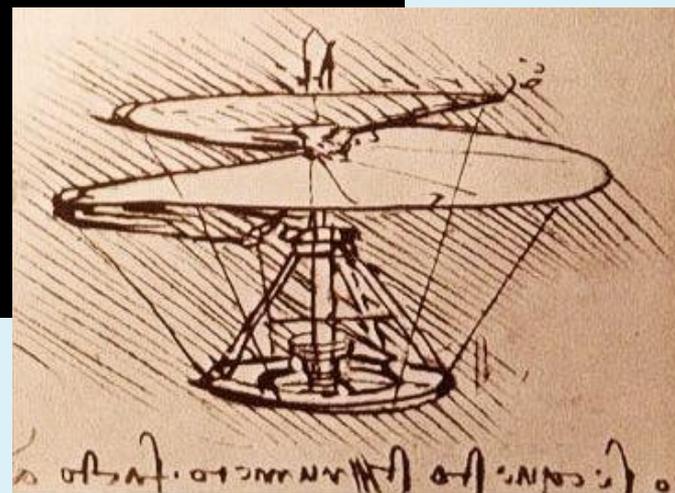
- **Коптером** называют любой летательный аппарат построенный по вертолетной схеме
- **Мультикоптер** – коптер с несколькими пропеллерами (винтами)
- **Квадрокоптер** – коптер с четырьмя пропеллерами
- **БПЛА** – беспилотный летательный аппарат, построенный по любой схеме.
- **UAV** – unmanned aerial vehicle
- **Дрон/Drone** – буквально «трутень», иносказательное название БПЛА/UAV



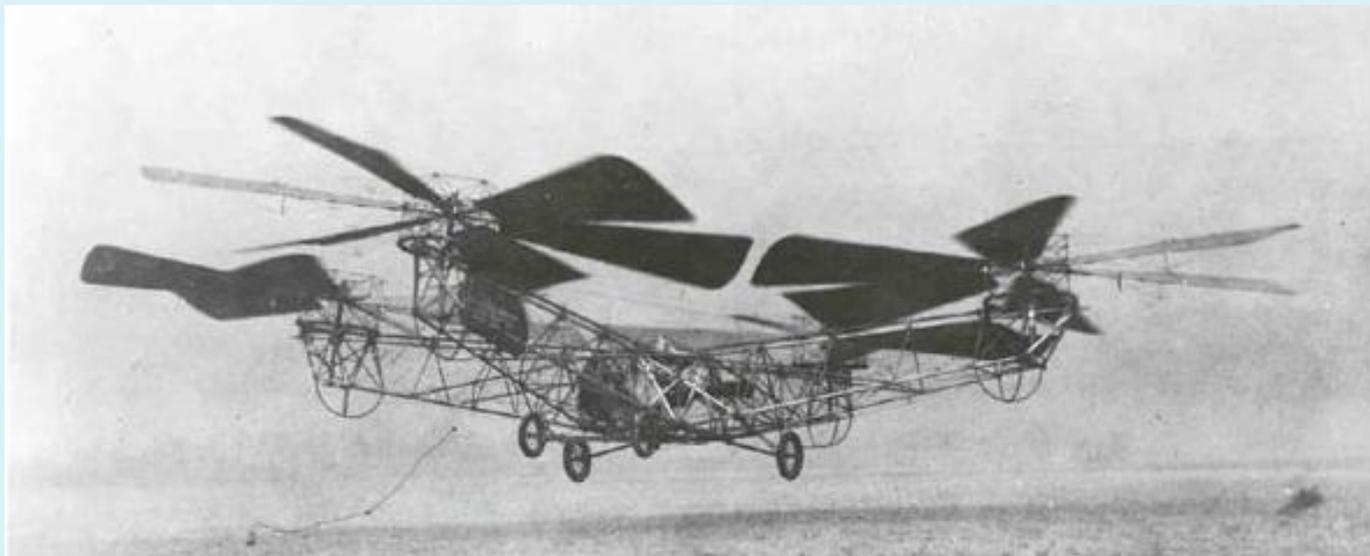
# История коптеров



# С чего все начиналось



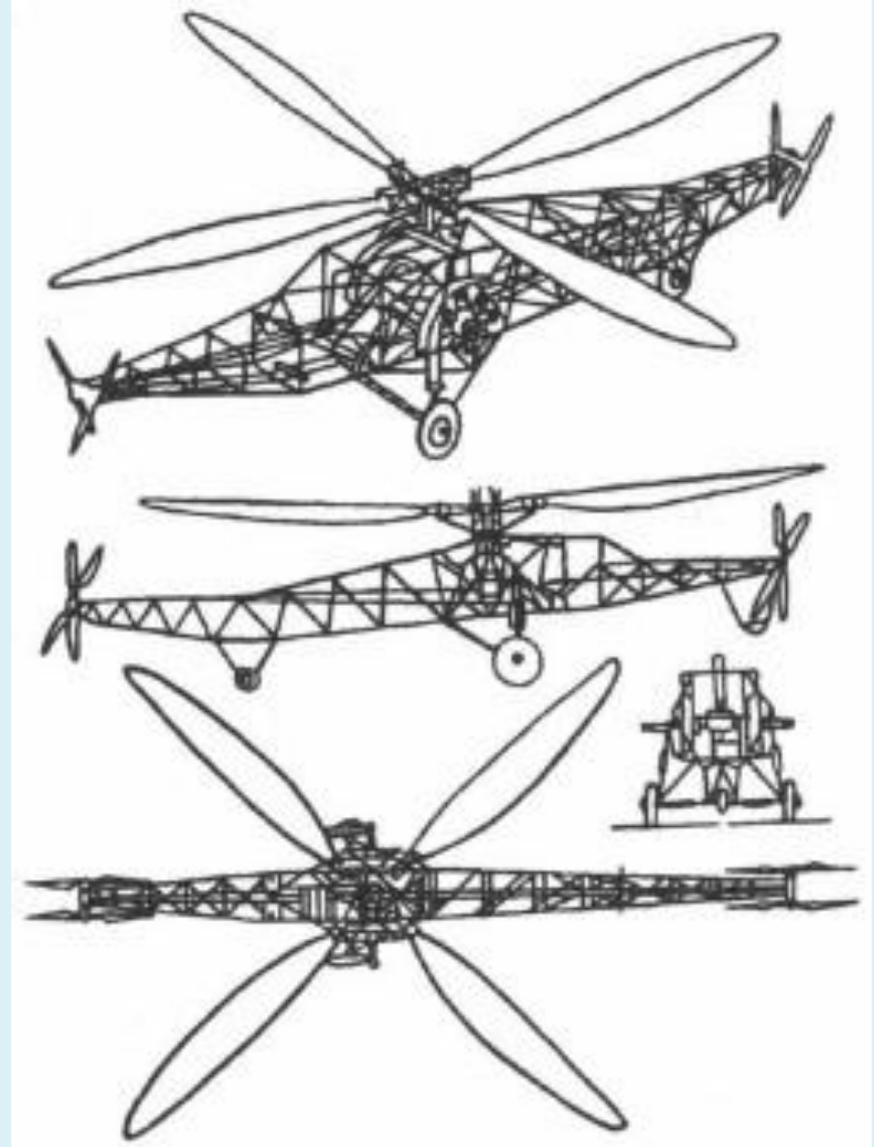
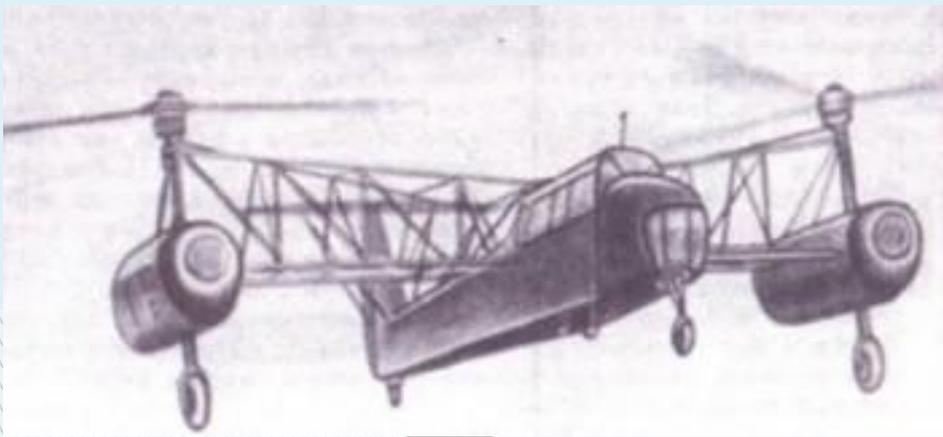
# Первые полеты



# Появление вертолетов



# Советские вертолеты до 1941 года



# Советские вертолеты после 1945 года



# Российские современные вертолеты



# Российские современные вертолеты

## - 2



# Современные вертолеты



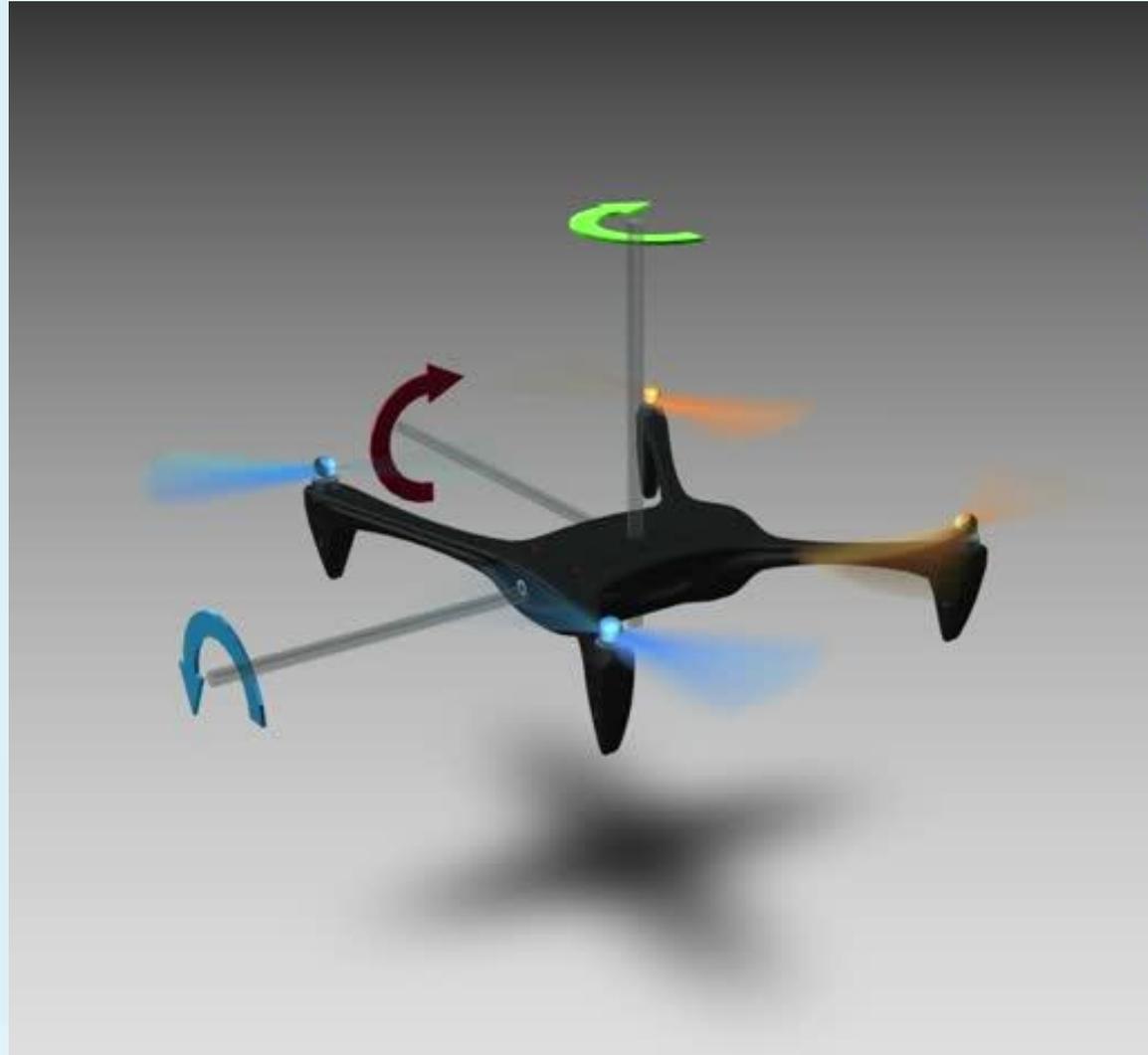
# «Летающие мотоциклы»



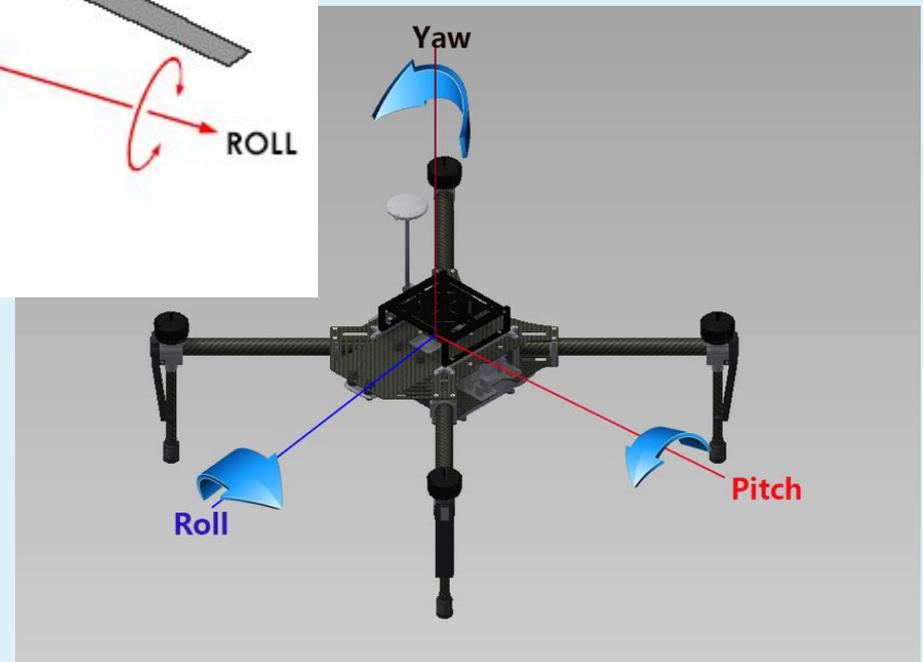
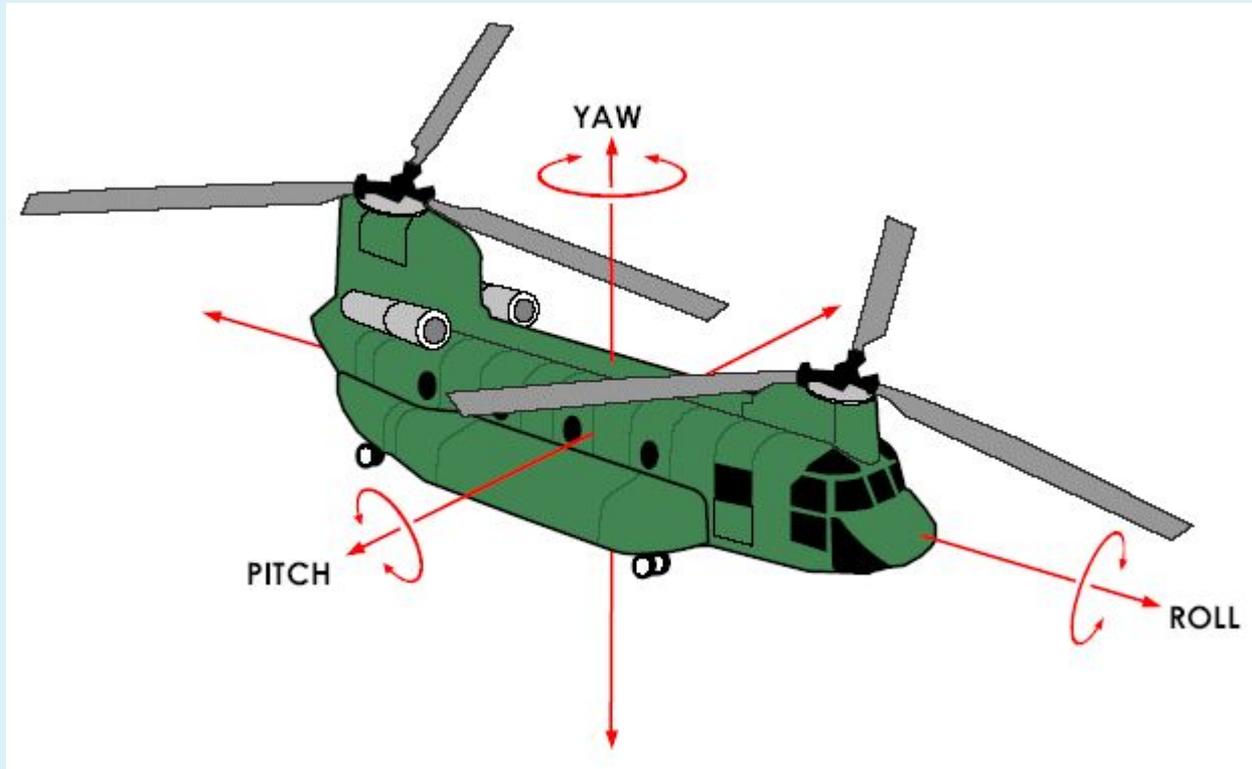
# Автожиры



# Механика полета коптера

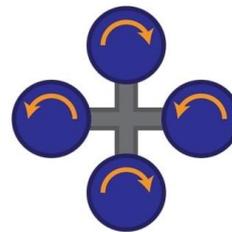
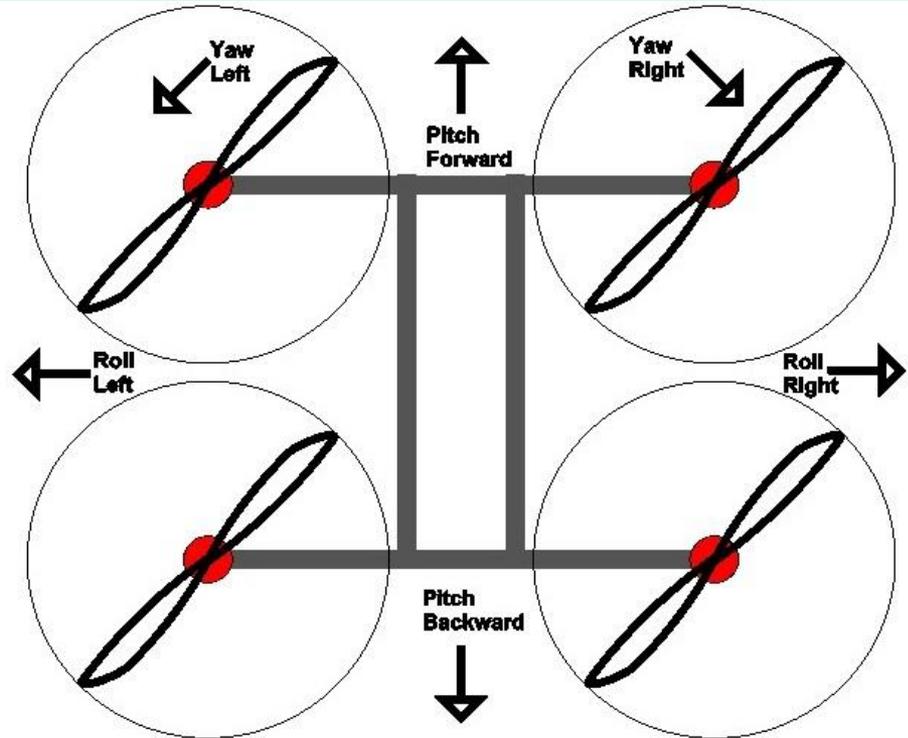
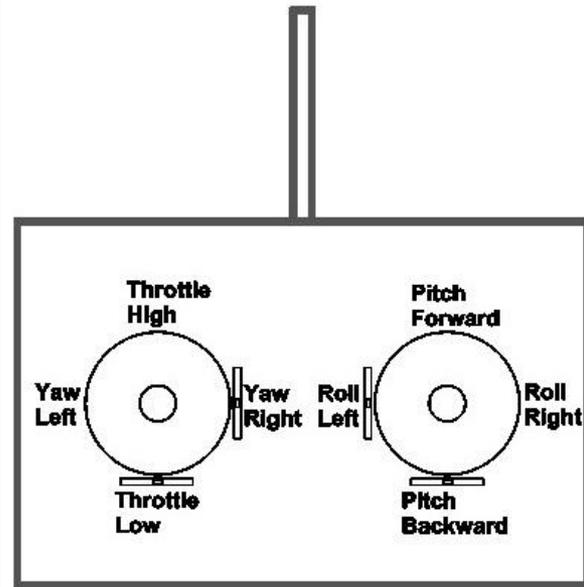


# Ориентация коптера

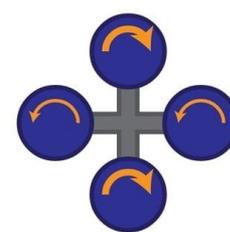


# Основы управления

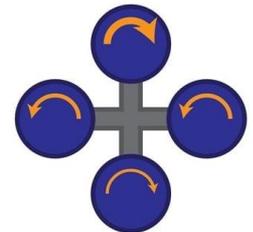
## КОПТАРОМ



Hovering: Equal thrust to All rotors

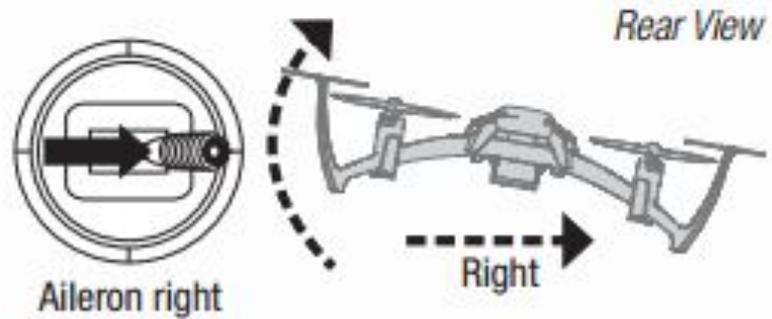
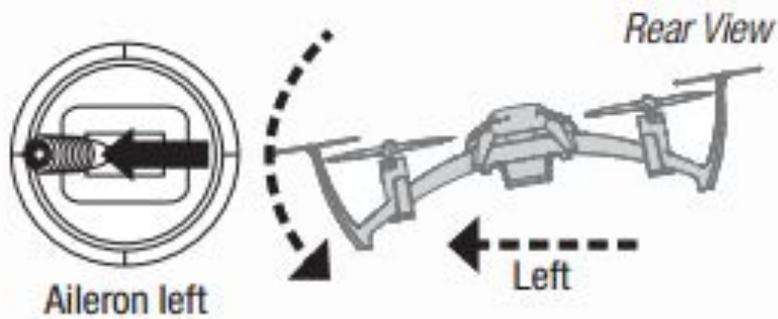


Turning: More thrust applied to rotors spinning in one direction

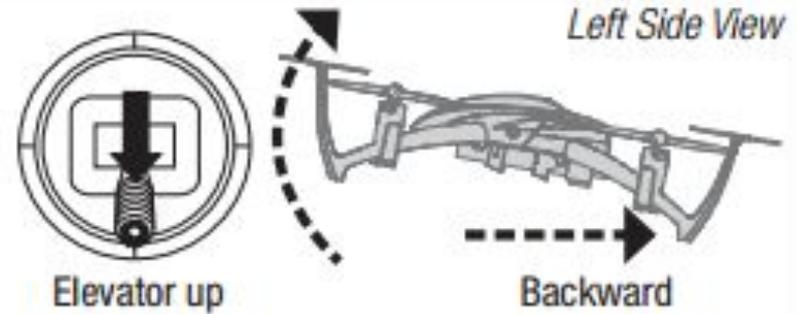
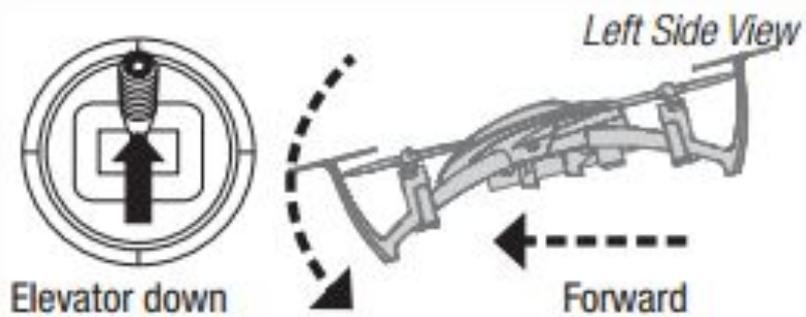


Pitch and roll: On rotor gets more thrust while two rotors get less, and one (bottom) gets much less

# Основы управления коптером - управление по roll

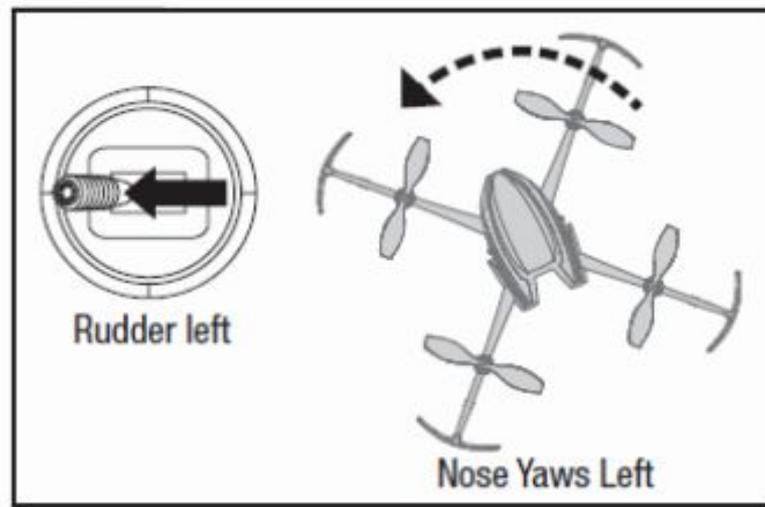
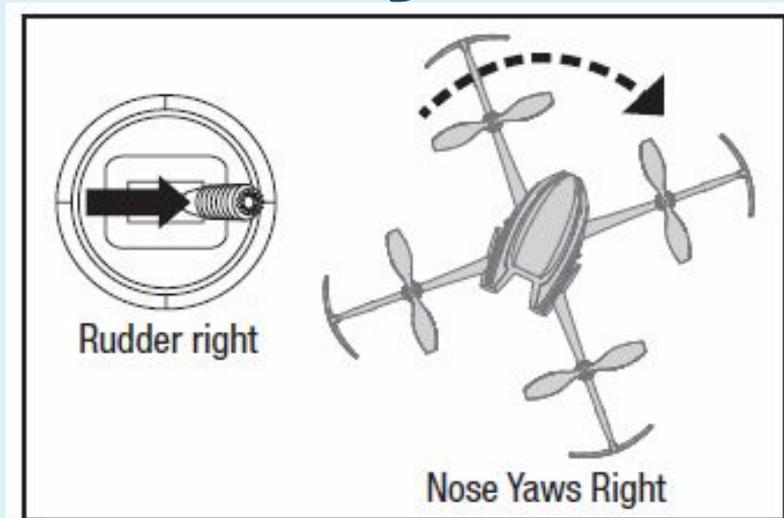


# Основы управления коптером - управление по pitch

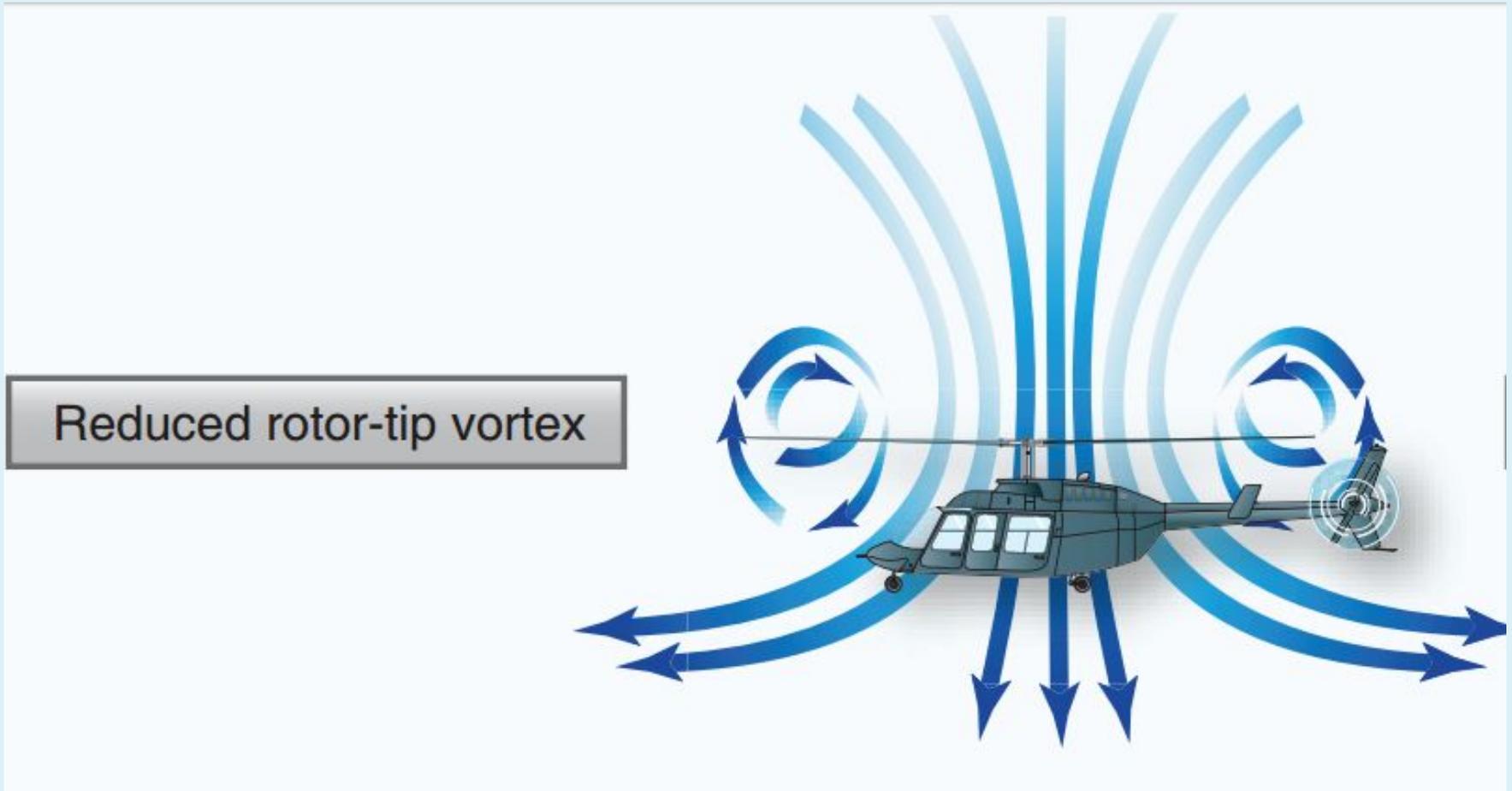


# Основы управления коптером

## - управление по yaw

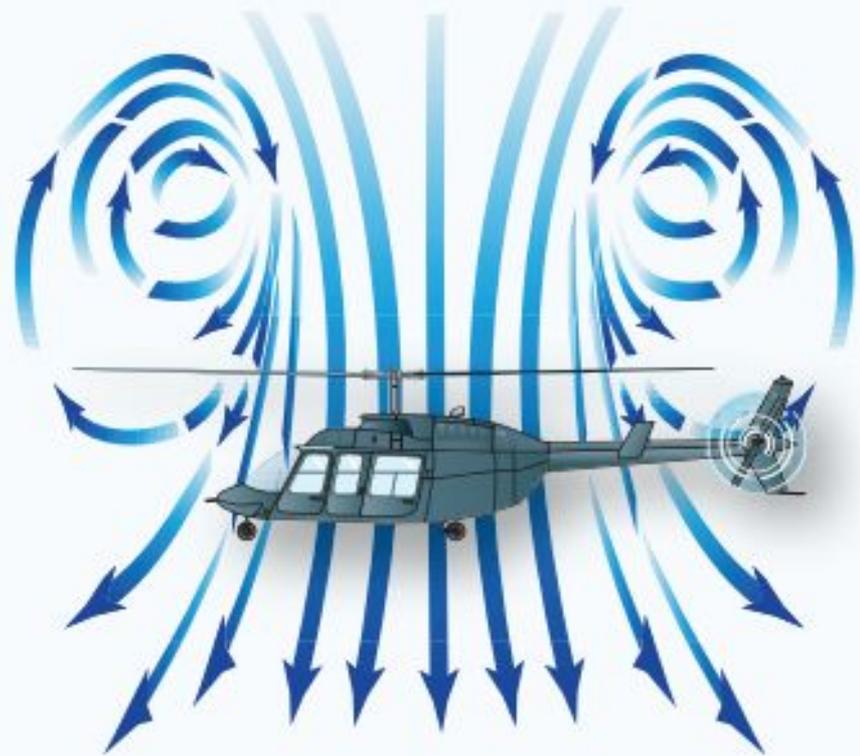


# Коптер невысоко (ниже своего главного размера)

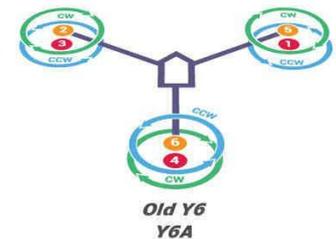
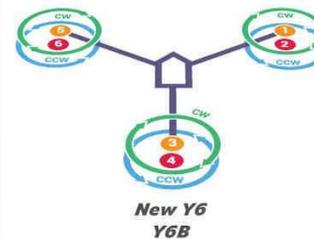
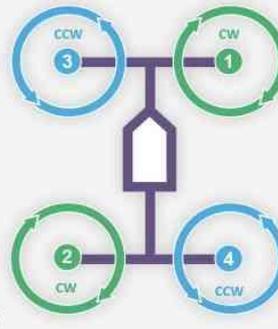
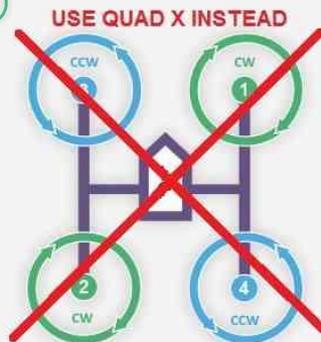
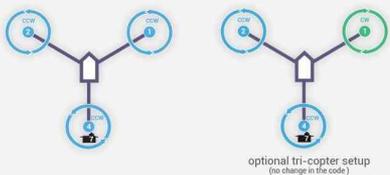
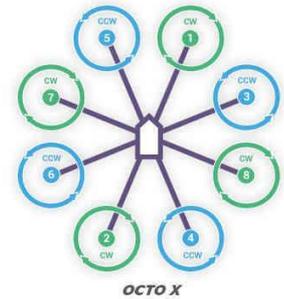
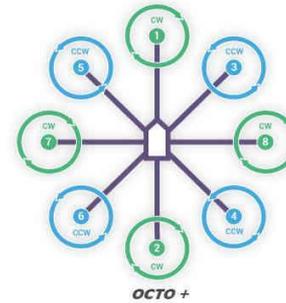
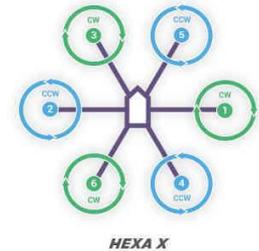
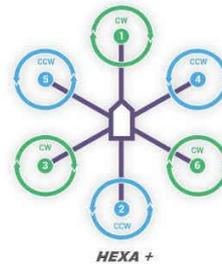
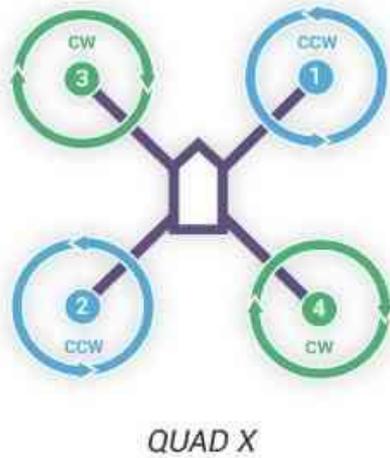
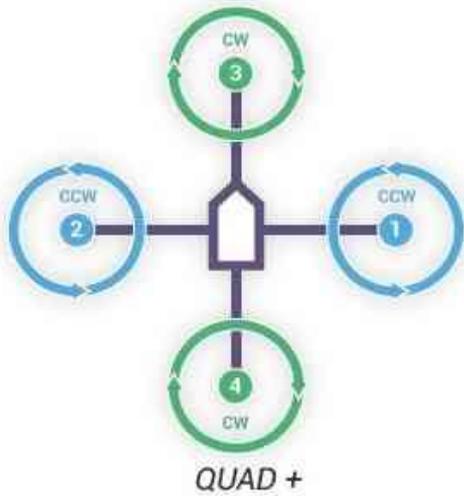


# Коптер висооо (выше своего главного размера)

Large rotor-tip vortex



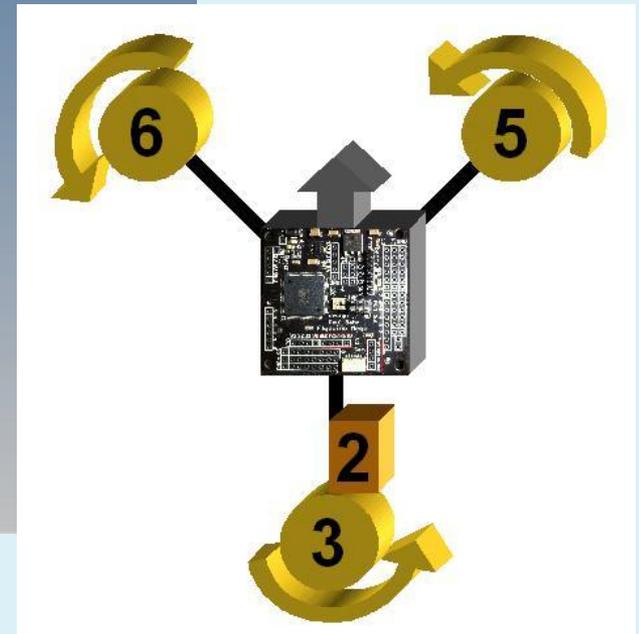
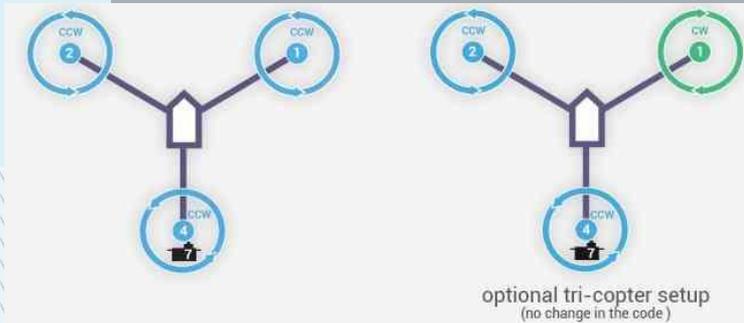
# Виды рам коптеров



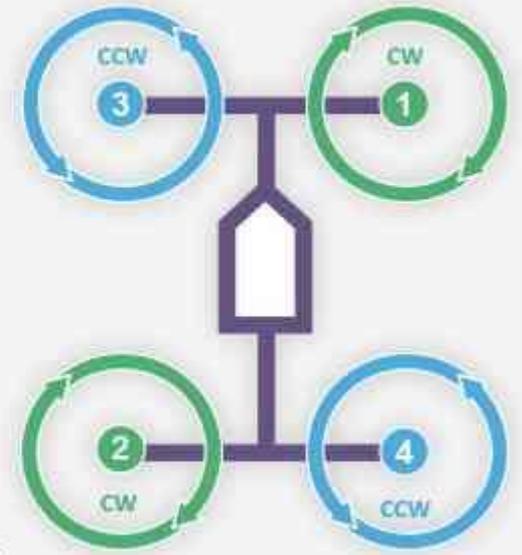
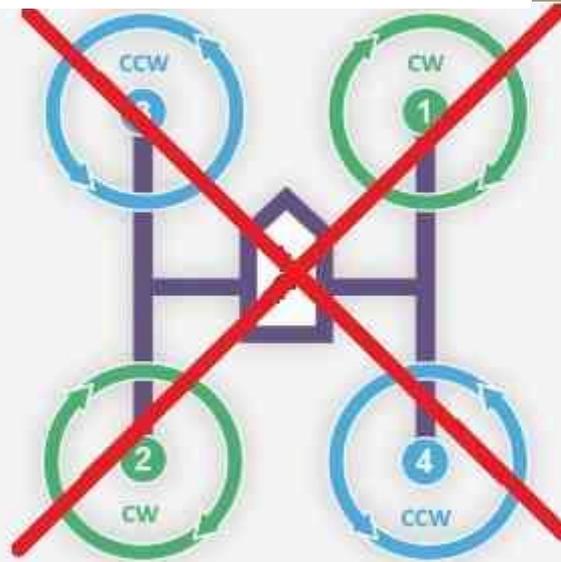
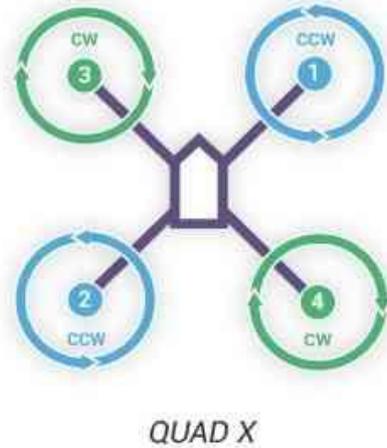
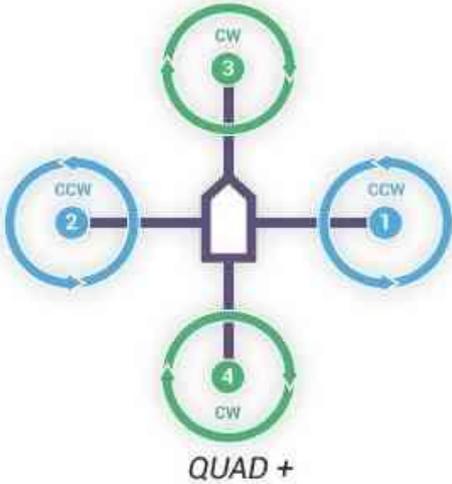
# BiCopter – 2 Motors multicopter



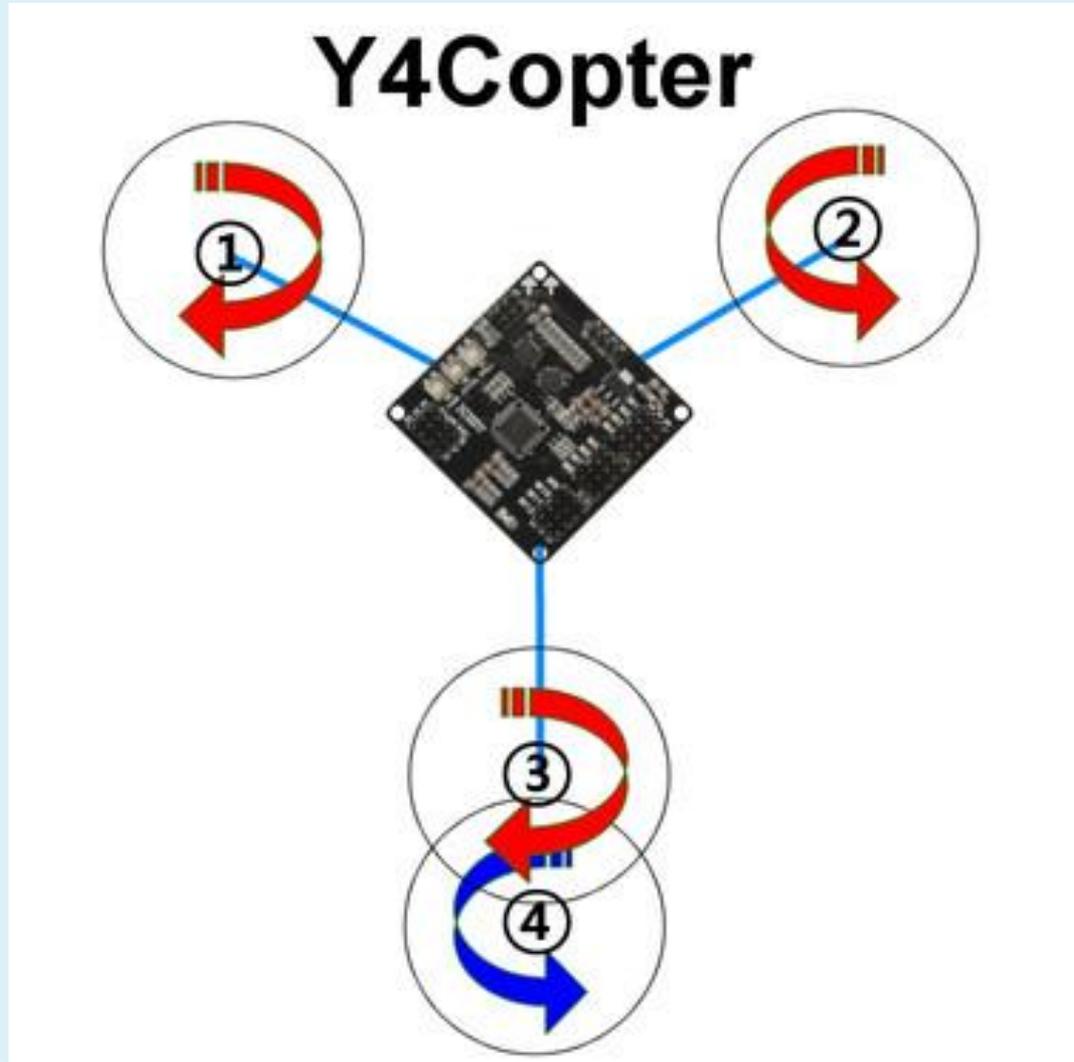
# TriCopter – 3 Motors multicopter



# QuadCopter – 4 Motors



# Y4 – 4 motors



# VTail – 4 motors



# Pentacopter – 5 Motors



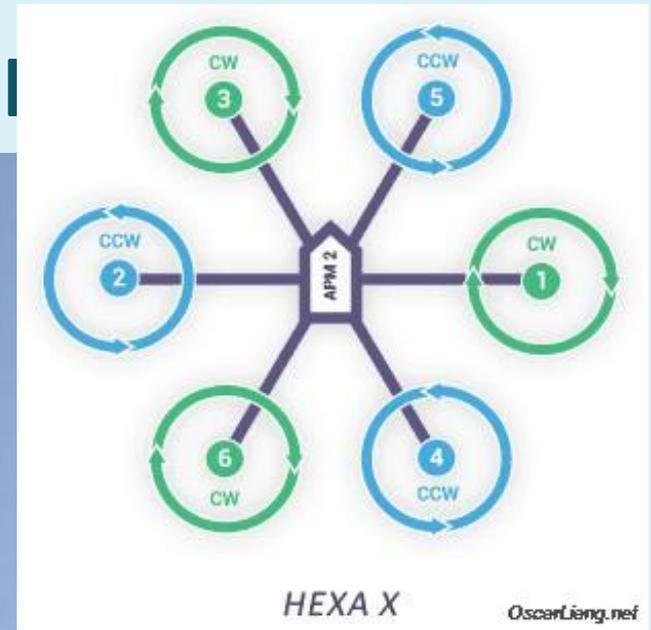
# Pentacopter – 5 Motors - 2



# Pentacopter – 5 Motors - 3



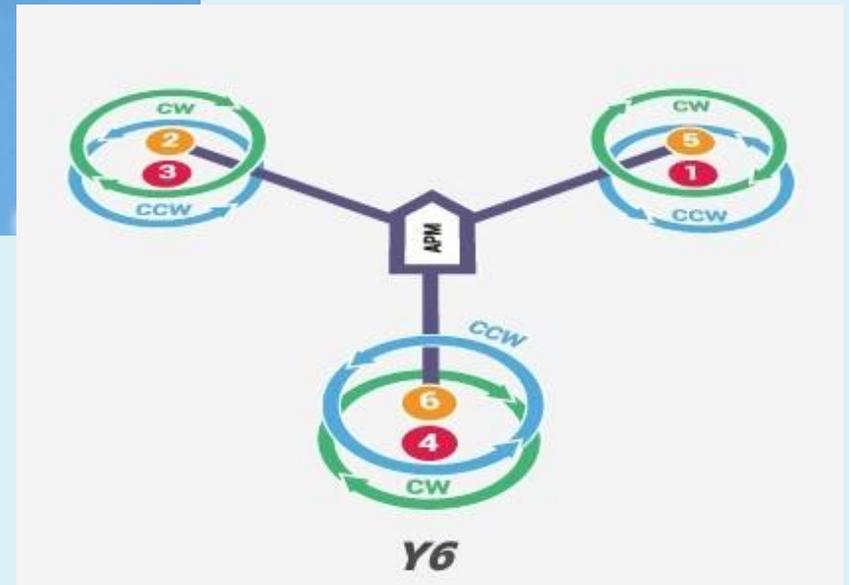
# HexaCopter – 6 Motors



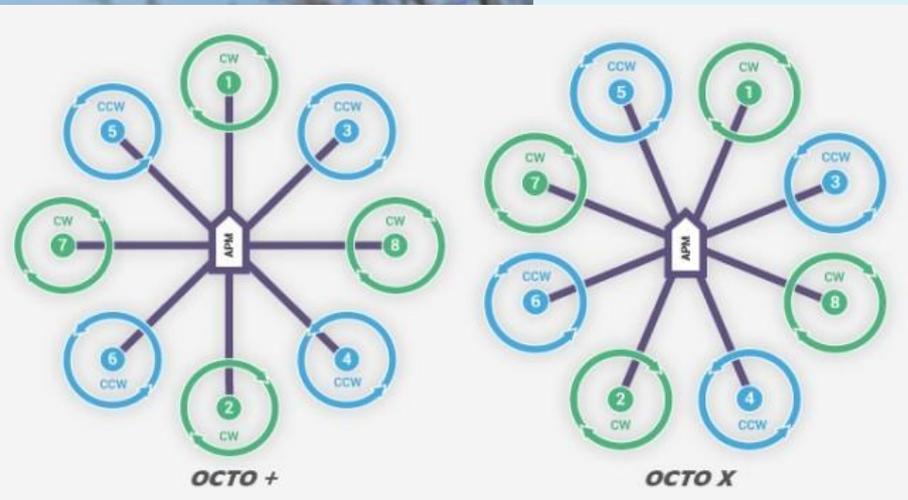
# HexaCopter – 6 Motors - 2



# Y6 – 6 Motors



# Octocopter – 8 Motors

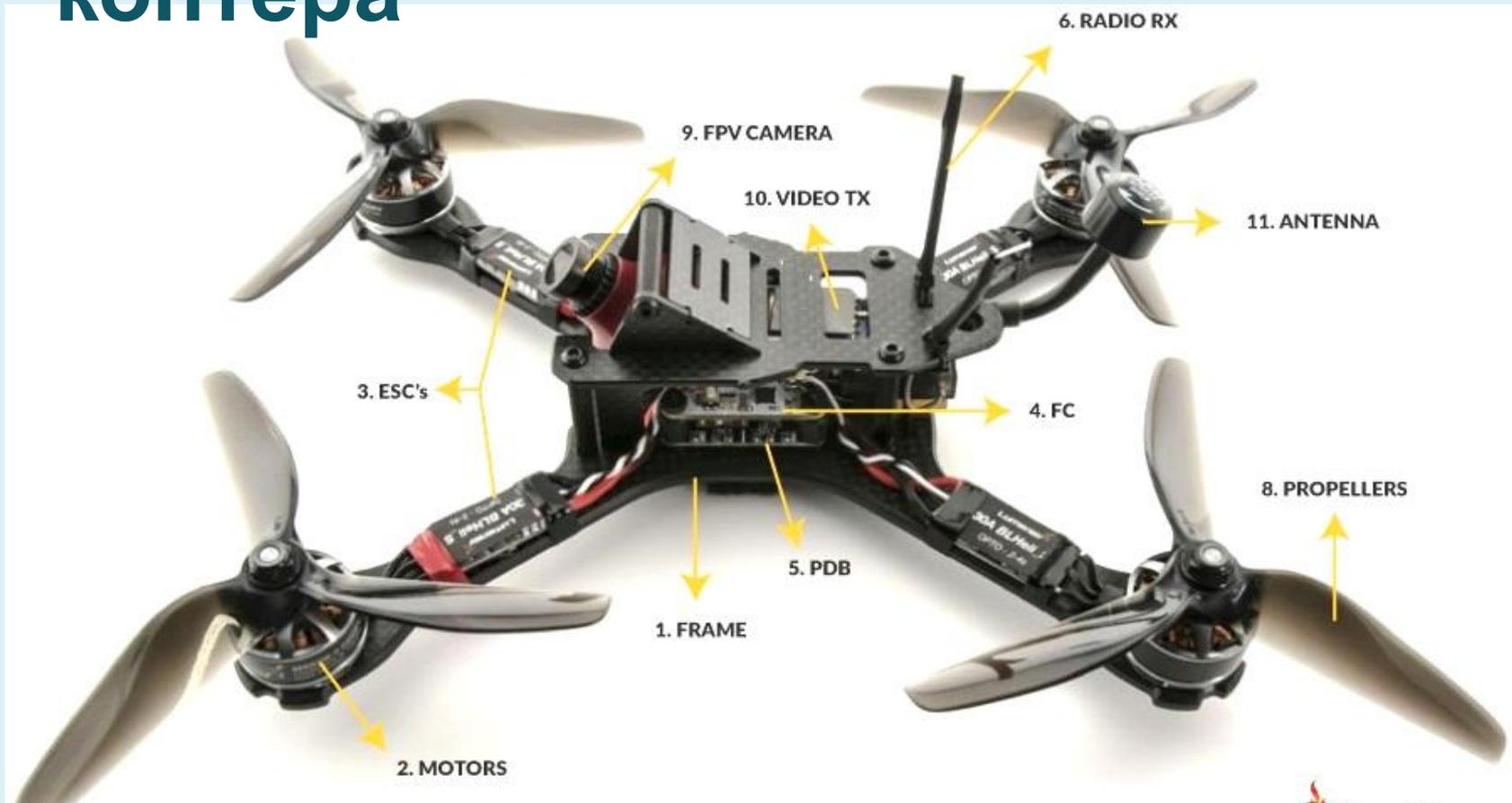


# X8 – 8 Motors



**X8**

# Основные составные части коптера





# Контакты

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