

Property	Particles	Waves	Flows	Fields
Collisions	Particles collide with one another, resulting in "sticking" or "reflection".	Waves pass through each other.	Flows "collide", resulting in build-up or vacuum.	Fields pass through each other.
Annihilation / Cancellation / Destruction	Only some combinations of particles annihilate. (E.g. matter/antimatter)	Overlapping waves "annihilate" or <u>destructively interfere</u> at particular spatial or temporal points. At other points, they enhance or <u>constructively interfere</u> . At no stage do the waves truly destroy each other.	Opposite flows cancel each other out. However, as stated above, this usually results in an increase or decrease in local "pressure". (Either an increase in particle or energy density.)	Much like waves, opposite polarity fields can cancel out at given locations, but at no stage are the underlying fields truly destroyed.
Velocity of phenomena	Under classical mechanics, particles can have a continuum of velocities that only depends on the energy of the particle. Once you start talking about quantization, you're already into concepts of wave/particle duality.	Waves have a constant velocity that depends on the nature of the medium that they travel through. While waves move, the underlying medium shows no overall displacement.	Flow velocities or rates depends on difference in pressure, be it physical particle pressure, or energy "pressures" such as temperature.	Fields don't move unless their sources move. Changes in fields are always a consequence of the field pushing around a particle source, or changes in the underlying medium.
Energy transfers	As stated above, energy in particles is "stored" in their velocity. If the velocity of a particle changes, it has lost or gained energy. Energy is transferred by collisions.	Waves store energy in their <u>magnitude</u> or <u>frequency</u> . Waves gain or lose energy by emission or absorption from a physical (particle) source.	Either the flow is a transfer of energy (e.g. heat), or involves transfer of particles, in which case see to the left.	Energy can be gained or lost from a field, but this usually involves the formation of a wave, or movement of a wave.
Reflection	Particles reflect from other particles and material surfaces following the reflection angle law.	Waves reflect from material surfaces, again following the reflection angle law. Their magnitude may be preserved, or inverted.	Material (and some other) flows can reflect from surfaces, but usually break up into complex eddies. The reflection angle law is usually useless in these cases,	Fields don't move, so they also don't reflect in the true sense. However, fields can <u>induce</u> opposite fields in certain circumstances, that counter the field in a given region. This can

			and the physicist has to resort to using the deeper law of conservation of momentum.	be thought of as a type of reflection (e.g. superconductors).
--	--	--	--	---