## Velocities and Energies of Active Sun.

TABLE I. – *Velocities.*

| Duration | Phenomena | Velocities | Notes |
|---|---|---|---|
| Weeks | Plage regions | $\sim (0.5 \div 2)$ km/s | Doppler |
| Days | Sunspots | $(0.5 \div 8)$ km/s | Doppler, away from center of disk |
| Months | Quiescent prominences | Internal motions 10 km/s | Doppler and visible displacement |
| Hours | Ascending prominences | $(50 \div 700)$ km/s | Displacement |
| Hours | Coronal motion (internal) | 10 km/s | — |
| Minutes | Coronal whip | $\sim 600$ km/s | — |
| Minutes | Flares | Internal motions $(0 \div 600)$ km/s | Doppler |
| Minutes | Flare surges | $(50 \div 250)$ km/s | Doppler and visible displacement |
| Minutes | Steady streams and flows of gas producing sequences of terrestrial disturbances | $\leqslant 1000$ km/s | — |
| Minutes | Effect of flares on existing prominences | $(100 \div 1000)$ km/s | — |
| Minutes | Effect of flares on triggering other flares | $(1000 \div 1500)$ km/s | — |
| Minutes | Radio bursts type II (flare-associated) | $\sim 1000$ km/s | — |
| Seconds | Radio bursts type III (flare-associated) | $\sim \frac{1}{3} c \div \frac{2}{3} c$ | — |
| Hours | Radio bursts type IV (flare-associated) | $\sim 500$ km/s | Highly correlated with ensuing geomagnetic storms |

TABLE II. – *Energies.*

| | |
|---|---|
| Large flare: | $> 10^{32}$ erg (radiated energy)<br>$> 10^{30}$ erg (particle emission, 10 MeV $\div$ 30 GeV per proton) |
| Radio emission | from large flare $\sim 10^{25}$ erg<br>Ejected mass $\sim 10^{19}$ g (total $\sim 10^{34}$ erg)<br>Total energy content of quiet corona $\geqslant 10^{32}$ erg<br>Implies annihilation of 500 G in the flare |

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